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A Lecture
ON THE
OVARIAN HORMONE.

Delivered at the Institute of Pathology and Research, St. Mary's Hospital, on May 10th, 1928,

BY E. C. DODDS, M.D., PH.D. LOND.,
PROFESSOR OF BIOCHEMISTRY, UNIVERSITY OF LONDON; CHEMICAL PATHOLOGIST TO THE MIDDLESEX HOSPITAL.

COMMERCIAL medical literature, and more particularly that emanating from America, would seem to indicate that it is more or less waste of time to go over such well-established and worked-out ground as that of the ovarian hormone. I could read you innumerable extracts from commercial publications proving conclusively that the whole question of ovarian substitution therapy has been completely worked out, and that the physician has only to buy the tablets and supply them to his patients. This type of literature with its horrible jargon and incredible claims has put the subject in a distasteful position. It is desirable, therefore, to see where we really do stand. I propose to make a very brief historical summary and then to attempt to show the various experimental researches leading up to the isolation of the ovarian hormone, concluding with a few remarks on the clinical aspect.

HISTORICAL SUMMARY.

The fact that the ovaries are associated with sexual characteristics has been known for a long time, and this knowledge has been in the possession of farmers and breeders from time immemorial. Although the effects of complete ovariectomy have been studied for generations, it would appear that only comparatively recently has the possibility of substitution therapy in human beings been thought of. When one explores the literature in the hope of finding the first workers to suggest substitution therapy, there arises the difficulty common to all such researches; when what is apparently the earliest observation on this problem is selected and put forward as the first experiment, it is usual to find that another searcher can produce a set of experiments dating from an earlier period. I will, therefore, quote some of the earlier work without prejudice, however, as to whether it is really the earliest observation.

In the year 1900 Knauer[1] performed an elaborate series of experiments in which animals were spayed, and after they had remained in a quiescent state for a considerable period, their sexual activities were reawakened by ovarian grafts. From this he concluded that the ovaries possessed an internal secretion responsible for the phenomena of œstrus, and that they had a function quite apart from their main and obvious one—namely, the production of ova. During the same year, Theodore Landau[2] studied the effects of administering ovarian tissues to patients suffering from climacteric symptoms, and in addition he gave his preparations to young women who had undergone the operation of double oöphorectomy. According to this worker, the result of his experiment was entirely satisfactory, the symptoms were abated, menstruation was established, and the patients improved rapidly upon treatment.

These publications caused a considerable amount of interest in this subject and many papers appeared from the year 1900 onwards. A typical example can be quoted in the work of Mainzer, 1903.[3] In order to test whether the effects of the treatment were due to suggestion, Mainzer performed a series of control experiments. Without the knowledge of the patient he substituted dry meat for the ovarian tissue, and found that the patient immediately relapsed into her former state; from this he concluded that the amelioration of symptoms could be attributed solely to the administration of the ovarian tissue. The method of preparing this material was extremely crude. The ovaries were merely dried at a low temperature and the resultant material made up into tablets. It would be possible to continue almost indefinitely to quote observations of this type, results which, according to the publications, were entirely satisfactory. One great point in all these investigations to be noticed is that the workers give the tissue by the mouth. As we shall see later it is difficult to understand the good results, because the workers of late years have shown that the extract by mouth is inactive. There is one exception to the oral administration: Federoff[4] injected crude extracts subcutaneously and intravenously. But, since he only reports the effects of his extracts upon the blood pressure and pulse-rate, one can conclude that his material was very toxic.

EXPERIMENTAL RESEARCHES.

Yet another point will at once strike the critical observer. In all these experiments no animal standardisations were performed at all. The investigators proceeded straight to the clinical trial. Starting in 1900, we can trace the observations right up to 1912 before there is any reference to animal tests. We can, in fact, state that all the exact work on the ovarian hormone commenced in this year. The most important observation was performed by Adler.[5] He showed that by repeated injections of crude watery extracts of the whole ovary it was possible to produce the typical signs of œstrus in animals. This careful series of observations was checked by histological investigations of the uterus and vagina, and there can be no doubt that he succeeded in obtaining potent preparations. We can, therefore, begin our serious consideration of the literature on the subject from this point. From 1912 onwards we have before us a series of careful experiments, particularly on the chemical side. The standardisation of the preparation was carried out on animals, and therefore the whole question was put on a much sounder footing. In the experiments about to be quoted, two more or less new aspects will strike the critical observer. In the first place, it will be found that practically all the workers from 1912 onwards began to associate the active principle with the fat-soluble material; that is to say, practically all methods of preparation had, as an essential step, the extraction of the tissues with some volatile organic solvent. In the second place, it will be noted that the workers tacitly assumed that any preparation which would produce sexual activities in animals would also produce menstruation in the human subject. For instance, it is quite obvious from a study of the work of 1912 onwards that the authors were certain that any extract producing œstrus or rutting symptoms in animals would, without doubt, be a potent therapeutic agent in the treatment of ovarian deficiency in the human being. As we proceed we shall have to examine both of these points, and it will be found that the first theory, with regard to the fatty nature of the active principle, is partially correct; whilst the second assumption is one upon which I doubt very much whether it is possible to give a definite opinion at the present time.

Since the method of testing extracts is the most important and, in fact, the only criterion by which it is possible to assess the value of the earlier work, it will perhaps be as well to consider an investigation based on careful animal work. There can, of course, be no doubt that the results of the very early workers who proceeded straight to clinical tests were fallacious and completely lacking in quantitative basis.

Many of the earlier publications dealing with the chemical and physiological properties of the hormone left no clear-cut account of the standardisation. Discounting various observations which we now know to be incorrect, undoubtedly one of the clearest pieces of work was that of Herrmann and Fraenkel,[6] and the following account is taken from the patent specification:—

Finely minced ovaries are extracted several times with some volatile substance—preferably alcohol. By extracting

the previously dried tissues the best results are obtained. The solid matter has to be filtered and pressed in order to separate it from the solution, and the alcohol has to be distilled off. Thus a watery residue is left with the active material present as a suspension. This residue is then shaken up with ether in a separating funnel, and in this way the suspended material is removed from the water. The ether solution is then evaporated down, and acetone is added to precipitate the lipoidal fraction which may be separated either by filtration or by centrifugation.

The active principle is obtained when the clear solution has been evaporated to dryness. The following method purifies it. After precipitation of the lipoids with acetone, the solvent is evaporated off and the residue is dissolved up in alcohol. The addition of an alcoholic solution of lead acetate precipitates fatty acids. The solution is evaporated to dryness after the removal of the excess lead, and is then distilled in the highest possible vacuum. The hormone distils over between 190° and 210° C. The distillate contains in addition some cholesterol esters, and is treated with a small volume of cold alcohol. The hormone readily dissolves and much of the cholesterol compound crystallises out and can be separated by filtration. The alcohol is evaporated off and the oily residue is subjected to a second distillation in high vacuum. Placenta may be used for the preparation of this substance.

Properties.—"A light, viscid oil at normal temperature" is the substance. It may be distilled in a high vacuum at a temperature of about 200° C. These preparations give the reaction for cholesterol, but active material can be obtained almost free from cholesterol. It was found to contain only carbon, hydrogen, and oxygen when analysed, and to give the following percentage composition: C. 81·33 to 81·62; H. 11·32 to 11·49.

Herrmann and Fraenkel indicate what they consider to be a criterion of activity by stating that if the substance is administered subcutaneously to prepuberal rabbits for a prolonged period, the onset of premature puberty is noted. They also state that an extract, to be considered active, must produce rutting symptoms out of rutting time, and if administered over a prolonged period should cause a very great increase in the size of the uterus and appendages. The work of Herrmann and Fraenkel set up certain definite standards for determining the activity of the preparation, and the majority of serious workers adhered to this type of method.

Biological Test of Activity.

It can be seen, however, that it is very difficult to define the activity in a quantitative manner by this type of method; it is only possible to say whether a preparation is active or not. Fortunately the application of some purely biological work has resulted in the gradual replacement of this method by one which now promises to develop into a fairly correct quantitative method. In 1917 Stockard and Papanicolaou[7] noted that the type of cells obtained from a vaginal smear of small mammals was influenced by the appearance of œstrus, and this work was extended to embrace other animals by various workers. The vagina is represented by a solid cord of cells in the pre-puberal rat, appearing in the vulva merely as a slightly raised mark. The opening out of this strand of cells shows the onset of puberty. In the non-œstral rat, smears of the vagina, stained with hæmatoxylin and eosin, show the presence of epithelial cells in various stages of nuclear degeneration and cytoplasmic shrinkage, together with some polymorphonuclear cells. Congestion of the vulva may accompany the onset of œstrus, and the vaginal opening appears larger. The smear shows nucleated epithelial cells alone. The vagina is nearly dry when œstrus is at its height. The smear shows cornified, non-nucleated, red eosin-staining cells. The presence of these cells makes the diagnosis certain, though external signs may be absent. These changes take place in reverse order as the œstrus recedes. These researches provided an accurate means of determining the onset of the sexual cycle in animals, and so could be made the basis for a method of standardising the ovarian preparations.

To Allen and Doisy[8] belongs the credit of first suggesting that the ovarian extracts should be tested by this type of method. They repeated the work of Herrmann and Fraenkel on the chemical side, and applied the Stockard and Papanicolaou smear method to the study of the activity of the preparations. By this means a very great advance was made.

Thus the potency of ovarian preparations may be measured by two methods. A unit could be based upon the quantity required to produce the typical signs of puberty in a rat long before the age at which the condition supervenes naturally, or the amount required to induce œstrus in a castrated animal might form the basis of a method of standardisation. The former method would have certain disadvantages; for instance, the exact date of the birth of the animal would have to be known, otherwise it would be difficult, even with control animals of the same litter, to avoid the possibility of natural puberty. Also, a fresh rat would have to be used for each experiment, otherwise any positive result occurring might be said to be due to additive effect. On the other hand, if the second method were employed, one animal could be used for any number of tests when the reaction had subsided. The operation of double ovariectomy in young rats is quite easy. An incision is made through the back, parallel to the quadratus lumborum, the ovary is seized through the wound and cut off. It is advisable to ligature the pedicle in large rats before closing the incision. Michel's clips are used to close the skin wound. To make certain that the ovaries have been removed, sections of the tissues should always be cut. Sexual maturity cannot be achieved by natural means if this operation is performed before puberty. A "puberal" dose would seem to have to be greater than an "œstral" dose. The "œstral" unit has advantages over the "puberal" unit, which have led to its adoption.

Difficulties of Standardisation.

It can readily be seen that this method has all the possibilities of being capable of developing into a really quantitative reaction. A number of animals are ovariectomised and are swabbed daily for one week. During this period the animal should remain in a state of dicestrus. Any that show cornification during this period must, of course, be rejected. When a batch of animals is obtained that gives a uniformly negative swab over a prolonged period, standardisations can be performed upon them. It would appear at first sight that one could inject a series of animals with descending doses and thereby obtain a minimum quantity of extract that would give a full œstral response and thus could be defined as a unit. This method has been used up to August of last year, and it was assumed that the results were perfectly uniform. The yields were calculated on the basis of this type of standardisation, and a great deal of elaborate work has been done with regard to the distribution of the active principle throughout the body. Unfortunately, it has been shown that the above procedure is fraught with many difficulties and is, in fact, quite unreliable from a purely quantitative point of view. In the middle of last year Coward and Burn[9] published a paper in which they examined this type of method, and the results arrived at by them are so important that it is necessary to consider them in some detail. As they point out, it is obvious that the method of standardisation depends upon the assumption that the smallest dose of the extract required to produce œstrus in one rat will not seriously differ from that required in another. This has been tacitly assumed by all workers, but the investigations of Coward and Burn prove conclusively that this is not the case.

From a prolonged series of investigations they show that the amount of extract required to produce œstrus in a single rat may vary by as much as 1000 per cent., and from this they conclude that all methods of standardisation based upon a gradual reduction of the dose in a small series of animals must be entirely fallacious. In order to determine the relation between the weight of extract injected and the number of animals giving a full response, Coward and Burn took a preparation of the extract of which 5 mg. would seem to be a dose that would send the majority of a small number of animals into œstrus. Ninety rats were taken

and were injected with 5 mg. each. The rats were swabbed in the manner already described, and the slides were examined to find out how many were going into œstrus. After the animals had passed their cycle, the experiment was repeated, but in each experiment a different dose of the hormone was given. The general conclusions that can be formed from a study of this work show that, as the dose of the extract is increased, the number of rats responding does not increase proportionally; in fact, the number is smaller than would have been expected. One point that is demonstrated very clearly is that the minimum effective dose is by no means the same for all rats, and therefore some new criterion has to be obtained in the standardisation of the extract. From a statistical consideration these workers decided to define a rat unit of the extract as that quantity of material which would produce the full œstral cycle in 50 per cent. of the series of injected animals. They also demonstrated very clearly that no conclusive results could be obtained unless at least 20 animals were used.

We have repeated the whole of this work and have fully confirmed it. The method we now employ is that described—viz., an injection of at least 20 animals with a dose that will just give a response in 50 per cent. of the animals. Coward and Burn showed that the mouse unit is the same as the rat unit when tested by this method, thereby pointing out that the amount of extract necessary to produce the complete cycle bears little or no relation to the body-weight of the animal. These authors also stated that the extract was just as active in one dose as it was when the amount was split up into a series of injections given over a period of days. As will be seen later, we have found that these statements do not apply to the water-soluble form of the hormone.

Oily and Watery Preparations.

The chemical work on the process of preparation performed by Allen and Doisy consisted mainly in the extension of the work of Herrmann and Fraenkel, with the result that a more potent preparation was obtained. They maintained that an active principle was located in the liquor folliculi of the ovaries, and they elaborated a method for the preparation from this source. By their later methods they claim to have produced a substance of which the rat unit is about one-hundredth of a milligramme, but it must be borne in mind that they have not apparently used the statistical method elaborated by Coward and Burn. With regard to the distribution of the hormone, contrary to the views of Allen and Doisy and their co-workers, we have found that the residual ovarian tissue, after removal of the liquor folliculi, still contains a considerable quantity of the hormone, and we came to the conclusion that the active principle was distributed throughout the ovaries. This has also been demonstrated by Parkes and Bellerby.[10] For the preparation on a large scale the majority of workers use the placenta, and as the human organ is by far the most easily obtained in London, this has been used more or less exclusively.

Up to the present we have only referred to the preparation of the hormone in the oily form. This type of preparation has to be put up for injection either dissolved in oil or emulsified in sodium bicarbonate solution, but this has been found far from suitable for a hypodermic injection. The material resulting from the ordinary process of alcohol extraction has a unit as defined by Coward and Burn of some 8 to 10 mg. It follows, therefore, that if a large dose is to be given, the same weight of the extract is very considerable, and as this consists of a stiff oil, a local reaction usually results. By repeated purifications it is possible to obtain material of an activity between 1 and 2 mg. per unit, but even this does not give by any means an ideal solution for injections. Up to the present we have been unable to obtain oily material with an activity of below 1 mg. It can readily be seen that the very nature of the substance tends to inhibit its clinical use. Many investigators have endeavoured to prepare the active substance in a form soluble in water.

The literature on this problem is so extensive that a detailed review cannot be given. I will therefore merely mention one or two investigations.

Zondek and Aschheim[11] state that they could produce the hormone in a water-soluble form by boiling the oily material with acetic acid. Up to the present we have not succeeded in obtaining active material in this manner. Laqueur[12] and his co-workers in Amsterdam have published a very long series of papers in which they state that they have successfully elaborated a method for the preparation of the hormone in a water-soluble form. Again, the methods elaborated by Prof. Laqueur have not been very successful in our hands, but he has sent me material of high activity prepared by himself. At the Middlesex Hospital we have been working for some years now on this problem of preparing the ovarian hormone in a water-soluble form. Last year a method was elaborated by which the active principle was extracted from the placenta as a picrate which was subsequently converted to hydrochloride. This work[13] was published prior to Coward and Burn's observations on the standardisation, and a repetition of our work proved that the yields were very unsatisfactory and, in fact, that the method was unsuitable for general work.

A prolonged series of experiments with my colleagues, Dickens, Allan, and Howitt, showed that the hormone would resist boiling with baryta, and that from the baryta digest of the placenta the hormone could be recovered in a water-soluble form. The actual method of procedure is somewhat involved, and will only be dealt with in a very brief manner here.

The placenta is hydrolysed with baryta for a period of two hours by boiling in a flask fitted with a reflex condenser, and after allowing it to cool it is found that a precipitate has settled out and that a clear supernatant fluid is left. This is decanted and extracted with butyl alcohol. The extraction is performed fairly thoroughly in a shaker for a period of some hours. On allowing it to stand the emulsion separates immediately and the butyl alcohol is syphoned off. On evaporation a sticky residue is obtained which contains a part of the fats and soaps of the original placenta together with the hormone, but it is contaminated with large quantities of protein derivatives, such as peptones. The sticky material is dissolved up in water and the resultant solution is again extracted with ether in a separating funnel. The ethereal layer also separates quite readily on standing and is syphoned off and evaporated to dryness. This process completely removes the protein derivatives. A certain amount of nitrogen is still found in the material, but it has been found that this can be largely removed by shaking the ethereal solution with hydrochloric acid. The residue from the ethereal solution is heated with a small quantity of baryta in order to render the saponification complete. The precipitate of the barium soaps is filtered off; the excess of barium in the filtrate is precipitated by the addition of dilute sulphuric acid. The final solution is water-clear and possesses the property of producing œstrus in very high dilutions. Full details will be published later.

As will be gathered, this process has been elaborated as the result of a long series of experiments. Each stage has had to be checked by standardisation. A very curious, and at the same time misleading, phenomenon was encountered in the early stages of this work; it was found that a considerable yield of crude water-soluble material was obtained after the first baryta digestion; that is to say, this material, when freed from excess barium and injected into rats in one dose, was found to give a full œstral response, and could be standardised in the manner described by Coward and Burn. When, however, this material was subjected to a series of processes which, one had every reason to believe would lead to purification, it was found that the potency had diminished. We concluded that our methods of treatment had destroyed the active principle or reduced its potency, but, again, a long series of exhaustive experiments proved that this was not the case. It was found that the falling off of the potency was due to the fact that the material, when injected in one dose, was inactive, but when the same quantity was given in a series of injections spread over three days a full œstral cycle was induced.

A typical experiment on these lines is as follows:—

A preparation was given to 20 rats in single doses of 0·7 mg., and it was found that none of the animals went

into œstrus. According to the scheme which we have already outlined, this preparation was recorded as being completely inactive. When, however, another batch of 50 animals was injected morning and evening for three days with 0·026 mg. in all, a full œstral response was obtained in 25 of the animals, thus giving the correct percentage for the calculation of a unit. This remarkable result can only be explained by assuming that the active principle in this relatively pure water-soluble form is rapidly excreted, and that it is necessary to give a small number of injections in order to obtain the full response. This type of experiment has been performed so many times in my department that it leaves us in no doubt that the statement of Coward and Burn concerning the equality of effect of a single or multiple dose is wrong. It must, of course, be borne in mind that these observations were made entirely with a relatively crude oily material, the weight of the unit being somewhere about 10 mg. This material is absorbed slowly and will, therefore, imitate the effect of splitting up the dose. The weight of the unit of our material is somewhere about 0·02 mg., and a yield of some 150 to 200 units per kg. of placenta is constantly obtained. The preparation is without action on the blood pressure and does not give rise to local reactions when injected into animals. In fact, large doses seem to produce no ill-effects. It would appear, therefore, that this material is eminently suited to clinical investigations, and we are at present engaged in collecting a large stock of this preparation for clinical trial.

The Termination of Pregnancy.

Before leaving the purely experimental side of this question, there is one other very important pharmacological action of the extract, and that is its ability to terminate pregnancy in animals. This important action has been studied by Smith[14] in America, and by Parkes and Bellerby in this country. All these workers have proved that the injection of a fairly large number of units will cause abortion in laboratory animals. It is hardly worth while to consider the number of units required to produce this action, as this work was done prior to the publication of Coward and Burn's paper. We ourselves have repeated these observations and found that our own material will terminate pregnancy. My colleague, Dr. Allan, is at the moment trying to induce premature labour in laboratory animals by means of small graduated doses of the extract. By this means it is hoped to terminate the pregnancy and produce living offspring. If this problem could be worked out quantitatively there can be no doubt that its application to clinical medicine would prove of great value.

To summarise briefly the position of our knowledge of the ovarian hormone, we can say that we have a preparation that will produce œstrus in animals, and which can now be obtained in a form suitable for clinical investigation. The material will also produce abortion in animals.

Clinical Applications.

To many of us the clinical application of this substance is really the most important aspect of the whole problem. What clinical result do we hope to achieve by the use of this preparation? I suppose that one of the most useful outcomes of the work would be to start menstruation in women in whom this function was absent. The question arises as to whether we are justified in assuming that an extract capable of producing œstrus in an animal will produce menstruation in a woman. This immediately pitchforks us into one of the most difficult problems in biology—viz., to what does menstruation correspond in the lower animals? This, of course, is practically an unanswerable problem, there being so many theories supported by so much conflicting experimental evidence that it is not a subject for a biochemist to plunge into and give a brief summary of at the end of what has been meant to be mainly a chemical lecture. I will, however, attempt to summarise very briefly one or two of the existing theories. We must consider the various cycles that are going on in female animals. In the lower animals we have the œstral cycle, which we have described at some length, and we have, in addition, the ovulation cycle in which the ovary is discharging ova at certain definite intervals. In addition to this we have also the corpus luteum cycle, which is very short if pregnancy does not supervene. According to most observers, ovulation occurs in the majority of animals at some time during œstrus—that is to say, the rupture of the follicle, together with discharge of the ovum, takes place during each œstral cycle. Now in the case of the higher primates we have the same number of cycles, but in place of the œstral cycle we have, in addition, the menstrual cycle. To what does the periodic bleeding from the uterus correspond? And what relation does it bear to ovulation? The latter problem has in part been answered by the researches of Corner.[15] A careful study of the reproductive tract of monkeys revealed the degenerating ovum in the uterus which was in the later stages of the menstrual cycle. From this it would appear that ovulation occurs some time before menstruation. Now, since ovulation occurs in the lower animals during œstrus, it might be concluded that menstruation corresponds to œstrus, or in any case that the premenstrual period bore some relation to the post-œstral stage of other mammals. This, of course, is by no means a definitely established fact. According to Fraenkel,[16] menstruation is due entirely to the retrogression of the corpus luteum, and his work showed that when the uterine mucosa broke down he could always find degeneration of the corpus luteum in the ovary. He therefore regarded menstruation as a pathological process due to the destruction of the corpus luteum through pregnancy not supervening. As Corner puts it, "menstruation therefore (though by no means an abortion of the unfertilised ovum, as it is sometimes put) is merely a violent demolition of the pre-menstrual uterine edifice some days after the expected tenant fails to arrive." We can see, therefore, that the position may be summarised as follows.

Menstruation may correspond (*a*) to pro-œstrus; (*b*) to œstrus itself; (*c*) it may be a pathological process according to Fraenkel; (*d*) it may have no relation whatever to ovulation. If we are to accept the teachings of Fraenkel, then we must conclude that menstruation bears only a very distant relationship to œstrus in the lower animals. We must, therefore, not be disappointed if we cannot produce menstruation with our œstrus-producing hormone. Many workers have, however, reported positive results. The difficulties with regard to local reaction when oily material is injected have already been pointed out. In any case it is impossible to consider the question from a quantitative point of view. Some workers have reported that menstruation could be induced in amenorrhœa by the injection of 1 or 2 rat units, whereas others state that 6000 units must be given to produce effect. It is obvious, therefore, that we should gain nothing by a consideration of this literature.

Conclusion.

In conclusion, we can say that the work of biologists, physiologists, and biochemists has handed to clinical medicine a preparation which is highly potent in animals. It will produce œstrus, cause great enlargement of the genital tract, induce premature puberty, and will cause abortion and possibly premature labour. It remains to be seen what this new substance will do in the clinic. Unfortunately, we cannot regard the clinical literature of the past as being of much value, and before any person experiments with the material on women patients he should be certain that the material has been carefully standardised on animals. The important point to remember is that we are just about to begin the clinical investigation of the ovarian hormone, and that we are not, as certain commercial publications would have us believe, just putting the finishing touches to a completed field.

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(*Continued at foot of next page.*)

ON TWO APPARENT RECOVERIES FROM ANÆSTHETIC LEPROSY FOLLOWING PROTEIN SHOCK TREATMENT.

By PHILIP MANSON-BAHR, D.S.O., M.D. Camb., F.R.C.P. Lond.,

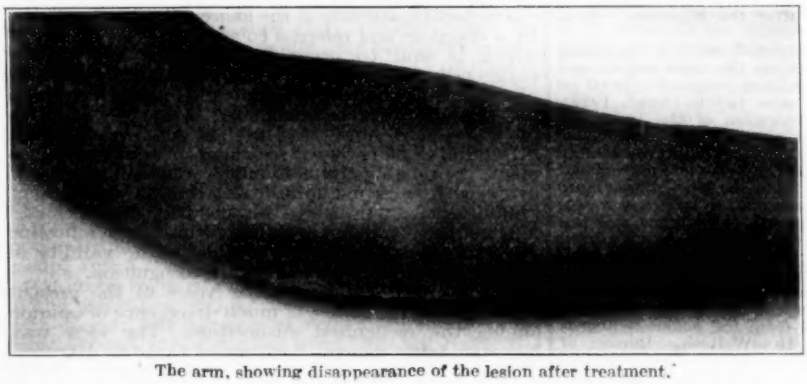
PHYSICIAN TO THE HOSPITAL FOR TROPICAL DISEASES, LONDON.

VERY striking improvements and remissions from all active leprous symptoms have been reported from time to time as a result of treatment with a variety of agents. Many successes from the injection of ethyl esters of chaulmoogra have been reported by Rogers and Muir.[1] These reports seem to justify the surmise that reagents which cause the most profound constitutional disturbances produce the best results on the more active symptoms of the disease. Somewhat similar results in nodular leprosy appear to have been obtained by the intramuscular or subcutaneous injection of irritating substances, such as turpentine, into the lesions; these are substances which primarily bring about severe local reactions. The intravenous injection of proteins, producing a generalised systemic reaction, was apparently first employed for leprosy by Hasson,[2] who reported successful and almost instantaneous results with intravenous injections of a vaccine consisting of 15,000 million killed *B. pyocyaneus* and 5000 million leprosy bacilli. The reactions caused by these injections appeared to be those of a severe "protein shock." In 1926 he reported a case of acute nodular leprosy originating in an oriental student who had been treated by this method with great and apparently lasting benefit; this improvement appears to have been maintained for over 18 months. Dr. N. A. Dyce Sharp,[3] from the Cameroons, has been able to record almost as favourable results from the intravenous injection of sterilised preserved milk—0·5 c.cm. in 5 c.cm. of water. A protein shock with severe reaction ensued and lasted several nights. There could be no doubt of the benefit to the patient. Relief from pain in joints and bones was obtained within 24 hours; perforating ulcers of the soles of the feet became painless and healed up in three or four days. The results were ascribable to the general tissue reaction consequent upon protein shock.

FIG. 1 (Case 2).

The lesion before treatment.

FIG. 2 (Case 2).



The arm, showing disappearance of the lesion after treatment.

In reporting the following cases of anæsthetic leprosy I wish to avoid using the word "cure" for what is, after all, an arrest of the tissue-destroying process. I do not claim that all the leprosy bacilli in the body have been destroyed. It is manifestly impossible to do this. In leprosy, above all diseases, it is extremely difficult to be sure that the favourable changes observed are permanent until a good many years have elapsed.

CASE 1.—An Eastern student; was first seen by me in October, 1925. He had lived in England two years and had been studying in London. In the middle of May, 1925, he found, quite by chance, a small discoloured whitish patch on his right knee. At first it was thought to be leucoderma, but subsequently it was found to be anæsthetic. The Wassermann reaction was negative. On careful examination there could be little doubt that this patch was one of anæsthetic leprosy. The margin was raised and slightly nodular, and was of a peculiar purplish colour. The macular patch measured exactly 3½ by 2½ cm. and in the centre was completely anæsthetic to pain and heat.

On Nov. 28th, 1925, a blister was raised by the application of Hasson's carbonic snow method, and in the centrifuged abstracted blister fluid it was possible to demonstrate numerous *B. lepræ*, thus clinching the diagnosis. On the same day treatment by intravenous injection of Hasson's vaccine was commenced. The result was to produce within an hour violent symptoms of protein shock. In all, six intravenous injections of vaccine were given within one week of each other, varying from ½ c.cm. to 1 c.cm. There was nothing in the subsequent reaction to distinguish it from ordinary protein shock. On June 19th, 1926, I found

PROF. E. C. DODDS: OVARIAN HORMONE.

(*References continued from previous page.*)

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that the area of anæsthesia had considerably diminished, and by August of that year he was able to feel light touch and heat over the whole of the previously anæsthetic area.

By Dec. 10th, 1926, all signs of leprotic infiltration at the margin had disappeared, leaving only a slight discoloured patch to mark the site of the former lesion. The patient was in good health and condition and had put on weight. The hairs were sprouting over the previously depilated area, and it certainly looked as if the leprous process had been arrested. The progress has since been maintained. He received no other form of treatment whatsoever.

CASE 2.—Also an Eastern student; after two years' residence in England developed anæsthetic leprosy of both arms. The history he gave was that, in May, 1926, a small red spot appeared on the flexor aspect of the left wrist and in June of that year a similar patch appeared on the right elbow. On both patches there was complete anæsthesia to pain and heat. The lesion on the left wrist was about 5 cm. in diameter, on the ulnar border, 2 in. from the wrist. The patch was indurated, circular, raised and raw-ham coloured, and it showed signs of spreading at one point. The lesion (Fig. 1) on the right elbow was 16 by 12 cm. in extent and had a scolloped border and raised margins of a deeper colour than the rest of the lesion. It showed faint nodosities and indurations along the border. Both lesions showed complete anæsthesia, loss of hair, and atrophy of the skin. There was definite thickening and induration of both ulnar nerves, especially the right, and this, together with anæsthesia of the ulnar side of the right hand and definite wasting of the interossei muscles, left no reasonable doubt of the diagnosis.

Unfortunately it was not possible to demonstrate leprosy bacilli either in the nasal mucus, in the blister fluid from the lesion, or in section of the skin taken from the margin. This, however, is by no means exceptional and did not invalidate the clinical diagnosis. Skin sections revealed the typical tissue changes of leprotic infiltration; round-celled infiltration round the hair follicles and in the corium. The Wassermann reaction was negative.

From the experience gained in the first case and from what appeared to be the direct effects of non-specific protein shock therapy, it was decided to administer "protein shock" by intravenous injections of T.A.B. (typhoid and paratyphoid vaccine) instead of by Hasson's specific vaccine. On Oct. 1st, 1926, treatment began with intravenous injection of 50 million T.A.B. The dose was gradually ncreased at weekly intervals up to 200 million organisms. As a rule the onset of the shock was considerably delayed and occurred from 4 to 12 hours after the injection. Four injections in all were given.

Soon after the course was completed marked alterations appeared in the anæsthetic patch on the right elbow, and since that time improvement has been progressive until no signs of the former lesions are now visible (April, 1928). Not only has the peculiar discoloration of the indurated skin completely disappeared, but sensibility of the affected area has entirely returned. There is no longer any anæsthesia of the right hand. The right arm (Fig. 2) is more muscularly developed and is actually larger than the left. There is no feebleness of grasp and the interossei are well developed. The hairs have grown on the anæsthetic patches and the skin looks perfectly normal. Both ulnar nerves are still thickened, but nerve sensibility is now produced in both arms by direct pressure on the nerve itself. The remarkable disappearance of all obvious lesions of the disease can best be judged from the illustrations. If more complete proof is necessary, it can be obtained from the coloured photograph taken and exhibited by the Wellcome Bureau of Scientific Research at the time the lesions were most marked and the patient was first seen. It would now be extremely difficult for anyone (one and a half year later) to ascertain whether the patient had ever suffered from leprotic symptoms. The nasal mucus remained free from leprosy bacilli during the whole period of observation.

As has been said, no attempt is being made to affirm that the patient is definitely "cured," but we can safely say that the disease process has been so arrested as to enable him to mix freely with his fellows.

I submit that these two examples of apparent recovery from leprosy are sufficiently striking to warrant record, and that the improvement in the patients' general condition and the restoration of the destroyed leprotic tissue and the return of sensibility are too apparent to be merely accidental. It is possible that beneficial results may not be obtained in every case of anæsthetic leprosy, but in early lesions protein shock treatment is certainly worth a trial.

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THE DIFFERENTIATION OF HYPERKINESIS IN CHILDREN.

BY E. W. NEILL HOBHOUSE, D.M. OXF., M.R.C.P. LOND.,

ASSISTANT PHYSICIAN, ROYAL FREE HOSPITAL AND WEST END HOSPITAL FOR NERVOUS DISEASE; PHYSICIAN TO OUT-PATIENTS, VICTORIA HOSPITAL FOR CHILDREN.

CERTAIN aspects of hyperkinesis in children, such as the nature of the neural disturbance in chorea and athetosis, have received the full degree of attention which the importance and obscurity of the subject might be expected to attract, and which is evidenced by numerous and voluminous contributions to the literature of neurology and pædiatrics. In striking contrast to this is the scanty attention which has been devoted to the exact differential diagnosis, by clinical methods, of the various forms of hyperkinesis. This problem has rarely been subjected to critical analysis as a whole; it is customary to find in one place a short discussion on the differences between habit-spasm and chorea, and in another between Sydenham's chorea and hysteria. The existence of symptomatic chorea as a manifestation of cerebral disease is well recognised, but little prominence is given to the possible difficulty which may be presented by its resemblance to the rheumatic variety. The confusion which surrounded the subject from an early date is well instanced by the use of the term "St. Vitus' dance"—formerly descriptive of a purely hysterical condition—as a synonym of Sydenham's chorea. One of the earliest attempts to place the study of hyperkinesis on a scientific basis is found in Dr. Francis Warner's lectures on the Anatomy of Movement [12] (1887), in which the view was first propounded that chorea was "a reversion to the infantile ratio of functions." The degree of classification accomplished by Warner was comparatively small, since but few of the conditions in which symptomatic chorea occurs were recognised in his time. The characteristic attitude of the choreic hand is illustrated by a diagram, and referred to as "the nervous hand," which is said to occur in "nervous and choreic children." Nevertheless to Warner belongs the credit of recognising that the subject could only be freed from the obscurity which surrounded it by the adoption of a strictly objective method of investigation. "Describing facts as we see them, in terms of movement, is probably the best mode of attempting to do away with such metaphysical terms as 'voluntary,' 'intelligent,' 'purposive,' in scientific descriptions." Much of the confusion in the literature of the following 20 years might have been avoided if the validity of this attitude had received earlier recognition.

The literature of the earlier years of the present century shows evidence of much divergence of opinion among the recognised authorities. The view was, however, fairly generally expressed that the diagnosis of chorea was an easy one, and that, if chorea was the result of a cerebral lesion, evidence of this lesion would always be present. The prognosis of cerebral lesions in children was then regarded with extreme pessimism, and the remarkable degree of recovery which is so often obtained in them does not appear to have been anticipated. James Taylor,[13] however, explicitly recognises a type of case to which attention is drawn in this paper, though he expresses no views on the differential diagnosis. "Just as a condition of choreiform hemiparesis may develop upon the clearing up of an initial hemiplegia, so may a condition of generally distributed hemiathetosis develop in the absence of any great degree of paralysis or rigidity." Leonard Guthrie [10] (1907) states that the movements which follow infantile hemiplegia bear no resemblance to those of rheumatic chorea. He was among the first to draw attention to an important point in the differentiation of movements—i.e., the persistence of hyperkinesis after recovery from Sydenham's chorea, "though the child is in perfect health and can inhibit the movements by an effort of will. The chorea is

cured, but the symptoms still remain." For this state of affairs he proposed the term "residual chorea," but made no suggestions as to its exact nature. In Pfaundler and Schlossmann's Handbuch für Kinderheilkunde[14] (1908) Thiemich paid some attention to the differentiation of movements. The occurrence of chorea *instead of* muscular rigidity, as a result of "intra- and extra-uterine organic disease of the brain," is emphasised; it is stated that the primary disease is at once revealed by a systematic examination. He regards movements of a non-choreic type as more likely to present difficulty in diagnosis; "the muscular unrest and twitching movements indulged in by neuropathic children are more apt to be confounded with chorea minor, and this mistake is not uncommon in general medical practice." In a later edition of this work (1924) T. Gött describes the diagnosis of chorea as easy. He bases the distinction between true chorea and the "choreatic restlessness" of anxious and shy children on the hypotonus which accompanies the former. Bechterew,[17] writing in 1911, subscribes to the current opinion, and says that the diagnosis of chorea presents no difficulty. In the most comprehensive work which has been written on the nervous disorders of childhood, that of Bruns, Cramer, and Ziehen,[15] the differential diagnosis of Sydenham's chorea from other forms of chorea is almost entirely ignored; the persistence of movement after subsidence of the disease is mentioned. These authors regard the diagnosis between chorea and hysteria as difficult; the two signs upon which they place the most reliance are the hypotonus present in chorea and the diminution of movement in hysterical cases when the attention is diverted. Georg Peritz[16] (1912), though he summarised the diagnosis of chorea as comparatively easy, drew attention to the existence of difficulty in a proportion of cases. He considered that the movements observed in infantile cerebral palsies were indistinguishable from those of Sydenham's chorea. The diagnosis was to be established mainly by the age of onset, the movements of cerebral palsies being usually congenital or coming on during the first year; the accompanying signs of pyramidal involvement would also make the case clear. Nevertheless he admitted that some cases would only be made obvious by observing the course of the disease over a prolonged period. In Garrod, Batten, and Thursfield's Diseases of Children[18] (1913) Voelker states that the diagnosis of chorea rarely presents any difficulty, except in the paralytic form which may simulate a hemiplegia. He adds that "the movements of chorea are sometimes roughly simulated by those of hysteria, but the latter are without that incoördinate and unpurposive character seen in chorea." Batten, in the chapter on cerebral diplegia, describes an athetoid group, a choreic group, and a "perverse movement" group; in the latter group there is, as a rule, a good deal of alteration in the mental condition. He states that "the cases with choreic and perverse movements are, when first seen, difficult to distinguish from ordinary rheumatic chorea, and it is only by noting the persistence of the movements associated with the mental defect that a correct diagnosis can be made."

During the years immediately following the war the occurrence of symptomatic chorea in epidemic encephalitis was recorded by numerous observers in various countries, and rendered the exact diagnosis a matter of much greater urgency and importance. Prof. A. J. Hall[19] described the movements in one of his cases as being indistinguishable from those of Sydenham's chorea. He also drew attention to the close resemblance between the pathology of encephalitis and that of the fatal case of chorea described by Greenfield and Wolfsohn.[20] In recent years the incidence of acute encephalitis has fallen in proportion to that of the more insidious types, but the occurrence of chorea as an early and as a late symptom is universally recognised. There is evidence of a certain tendency not only to utilise the association with extrapyramidal syndromes for the purpose of drawing conclusions on the pathology of chorea, but to extend the speculation to other forms of movement. Bing,[21] on the ground of a supposed frequency of tics and similar movements among Parkinsonian patients, has been led to believe that many so-called "functional" forms of hyperkinesis are the result of disturbed function in the basal ganglia, for which he suggested the term "anisosthénie extrapyramidale passagère."

Reference is made later to the contributions to the literature made by Wall and Kinnier Wilson, as representative of current opinion at the present date.

Fidgetiness.

One of the most frequent causes of the temporary removal of a child from school is "fidgetiness." A large number of children exhibiting this symptom are sent to hospital for advice or treatment, very commonly with the history that the school doctor or the teacher said that the child had St. Vitus' dance. A reason for this, and an entirely legitimate one, is afforded by the widespread recognition of the fact that an early removal from school of all cases of true Sydenham's chorea is of the greatest importance in checking the course of the disease. In this form of hyperkinesis psycho-motor activities are in excess, and all sources of mental and physical stimulation should be diminished until the inflammatory condition in the cerebrum has subsided. Hence it has come to be regarded as a policy of safety to remove a child from school if it is fidgety.

In contrast with the degree of attention which has been accorded to chorea, other forms of hyperkinesis have received comparatively little serious investigation, especially when they occur in children who are sufficiently well to attend school and lead a normal life. A child who exhibits any fairly widespread hyperkinesis is likely to be diagnosed somewhat uncritically as chorea, and the assumption usually follows that the case is one of true Sydenham's or rheumatic chorea. It is no rare event to find that a patient of this kind has been put to bed for six weeks, in strict isolation, and that at the end of this period the fidgetiness is considerably increased, while the mental state gives evidence of the harmful effect of enforced inactivity on a child. Again, it is no rare event to meet with a child in whom the diagnosis of chorea has been made at frequent intervals over a considerable number of years, perhaps at every periodic school inspection, while the mother states that he has been more or less fidgety all his life. If a child of this type is not suffering from Sydenham's chorea the line of treatment indicated will usually be the direct opposite to that of chorea; it will consist in providing constant occupation and attempting to replace the "involuntary" and inappropriate movements by activities—motor and inhibitory—which are directed towards an end.

It appeared, therefore, that an attempt to differentiate as closely as possible the various types of hyperkinesis met with in children was desirable on practical grounds as well as those of academic interest, and for this reason all children brought to hospital for "fidgetiness," or in whose case any suggestion of chorea had been made by school or other authorities, were observed by the writer during a period of about 18 months.

The existing terminology is not favourable to the elucidation of the neural mechanism of hyperkinesis. In the first place, comparatively little attention has been paid to the non-choreic forms, their pathogenesis being obscured by the confusion inherent in the expressions "organic" and "functional." Secondly, the word chorea carries a double significance, well recognised in the literature, but not always borne in mind by the practitioner. This was clearly indicated by Wall[1] in his Bradshaw lecture: "chorea is a symptom resulting from disordered function rather than a single disease," whereas "we are justified in speaking of 'rheumatic chorea' as a disease." This attitude has probably never been challenged, and has subsequently received additional justification from the frequent occurrence of symptomatic chorea in children suffering from encephalitis. Nevertheless, one finds little evidence of it in medical teaching and practice, and, in the writer's opinion, failure to distinguish between

the symptom and the disease-entity has been a cause of much error in the diagnosis and treatment of hyperkinesis. The words "purposive" and "purposeless" have little objective significance, and tend to confuse rather than to clarify the differentiation of movements. Some of the difficulties inherent in the terms "voluntary" and "involuntary" have been pointed out by Kinnier Wilson,[2] who has shown that they merely express varying degrees of automaticity. They are especially inadequate for description of the movements now under examination, for a further reason. If subjective factors are taken into consideration it will be obvious that in many of these children the movements are not only "involuntary" in the sense of being automatic; they are "contra-voluntary," entirely beyond the control of volitional inhibition, and an evident source of distress to the child.

If these cases are considered from the standpoint of the neural mechanism underlying them they will be found to fall into two principal types: (1) Those in whom the superfluous movements are reproductions of movements which are normally carried out by the child under certain circumstances, and which (though it is certainly true that many of them have become to some extent automatic) have been developed by volition, or as reflex responses of the type which yield evidence of cortical influence. They are produced by *normal* motor activities, the abnormality being in their occurrence or frequency. (2) Those in whom the movements are atypical in character, or are reproductions, usually more or less distorted, of movements of emotional expression. These two types of movement exemplify, or rather caricature, the normal motor activity of the child and the infant. Nothing in any way resembling infantile movement will be seen in children of the first type, while those of the second type often appear to differ from it in degree rather than in kind. Location of cases of hyperkinesis into one of these two groups, as a preliminary measure, has many advantages over the use of a classification involving subjective factors, and can usually be accomplished without great difficulty by clinical observation. A striking difference may be noticed in the sex-incidence of these two groups. The first, in conformity with almost all types of nervous disorder in childhood, shows a marked preponderance of males (about 80 per cent. in the writer's experience). In the second group a large majority of girls will usually be found, owing to the high incidence of Sydenham's chorea in female children as compared with male.

TYPE I.—*Movements which are Reproductions of Normal Cortical Movements.*

These vary greatly in their situation and extent; the more simple ones yield fairly obvious evidence of their origin, and throw light on that of the others. They include cases described under a variety of names; when the movements are diffuse, extensive, varying from moment to moment, the child will merely be described as restless or fidgety, or, as frequently happens, be erroneously considered to be suffering from St. Vitus' dance. When the movements are circumscribed, single or few in number, and have become stereotyped by habit, they correspond to the types to which the terms tic and habit-spasm have been more or less indifferently applied. There is, however, no fundamental distinction between them, and their mode of origin is identical. They are reproductions of movements which have been evoked as a response (whether purely reflex or to some extent voluntary is immaterial) to some stimulus, and they have persisted in the absence of the stimulus. They are, in fact, of the nature of conditioned reflexes; their mode of origin was a purely physiological process, but the inhibitory processes which should have extinguished them were in default. Obvious examples will be found in the more simple "tics," as when a facial contortion, throwing back the head, wriggling the shoulders, or any other compound movement is repeatedly performed. In some the original stimulus is easy to determine, and takes the form of irritation from a collar-stud or ill-fitting garment; the unconditioned reflex was a defensive one. Equally obvious are the grunting movements which may persist after some irritation in the throat has been present. The restless or fidgety child who fiddles with objects or picks his clothes merely exemplifies similar processes which are manifested in greater number but to a lesser degree. He is constantly repeating movements which have on past occasions been directed towards an end, but whose repetition is now superfluous and inappropriate.

In normal circumstances conditioned reflexes are extinguished at some period after cessation of the conditioned stimulus, or are suppressed by the inhibitory effects of subsequent afferent impulses, superfluous pattern-reactions thus becoming eliminated. In hyperkinesis of this type the inhibitory influences are defective. The experimental work of Pavlov in animals has shown that the formation and disruption of conditioned reflexes is a function of the frontal lobes, and we may regard children who show these movements as individuals in whom the function of the frontal lobes is below the optimum. Krasnogorski,[3 4] in his research on conditioned reflexes in children, observed characteristic differences in the formation and subsequent disruption of these reflexes in various psychopathic types, such as epileptic, subthyroid, and spasmophilic. Movements of this kind are found to some extent in children who show no other abnormality, but they are especially common and persistent in those who give evidence of psychopathic heredity, or of the spasmophilic type of rickets. The general rule that a disturbance of nervous function in a child is of slight or serious import according to the age is particularly applicable to this form of neurosis. In children under six it may be regarded as a small and often transitory divergence from the normal, which will right itself if attention is directed to the occupations of the child. In children over ten years of age general fidgetiness in itself is almost always a sign of defective mental adjustment, and is of unfavourable prognostic significance, while systematised tics are usually associated with some of the other disturbances of habit-formation which compose the clinical picture of psychasthenia.

TYPE II.—*Movements which are Atypical in Character.*

Movements usually classed as choreiform are the commonest of this type; others, such as athetosis and "spasmus mobilis," will be included. It has frequently been stated that each individual movement in chorea is a typical voluntary movement. This may be true, yet the total movement viewed in continuity is an entirely atypical performance. The essential difference between normal muscular activity and choreiform movement has been indicated by Kinnier Wilson,[2] who pointed out that Sherrington's law of reciprocal innervation no longer holds in the latter.

The exact situation of the neural disturbance which occasions this modification of motor activity still remains somewhat obscure, and it is sufficient here to refer briefly to some of the views most commonly held on this question. By analogy from certain chronic degenerative conditions such as Huntington's chorea, and some types of choreo-athetosis, "athetose double," &c., in which the lesions have been found to involve the basal ganglia to a greater extent than other parts (Levy,[5] the Vogts, and others) the situation in choreiform states has been conventionally located in these ganglia or their immediate connexions. One frequently expressed view is that choreiform movement is the result of "release" of extra-pyramidal neurones from the influence of the cortex, a reversion to the more primitive mechanisms of the infant. While this view does undoubtedly receive support from the resemblance between choreiform and infantile movements, its acceptance is rendered difficult by the cogency of the arguments submitted by Kinnier Wilson in favour of the relative integrity of cortico-spinal neurones in chorea. The balance of evidence seems to be in favour of his suggestion that cortico-spinal activity is unimpaired in as far as the hyperkinesis is concerned (in "paralytic" chorea it may also be affected), but is "released" from the influence

of afferent impulses from the basal ganglia and cerebellum. The changes found in the afferent cerebello-thalamic fibres by Bonhöffer [6] in some cases of "athetose double" lend support to this explanation.

Symptomatic chorea is met with in a variety of conditions apart from the rheumatic one. It occurs sometimes as an initial symptom, but more often as an early sequela, of epidemic encephalitis. It is often present, in association with other signs of neuronic disease, in a number of cases falling into ill-defined groups which are roughly classed as choreo-athetosis or "athetose double." In general, children of the latter types show athetoid as well as choreic movement, but it is commonly found that one form is replaced by the other after an interval of time. In a certain percentage of these cases the evidence of some cerebral lesion is unequivocal; there may be obvious spasm with reflex indication of pyramidal defect, as in many cases of double athetosis, or there may be some rigidity of muscles in a limb not affected by hyperkinesis, as in post-encephalitic syndromes. The existence of cases of this kind is well recognised, and the distinction between them and Sydenham's chorea presents no difficulty. A point with which the writer has been particularly impressed, both from personal observation and from study of published cases, is that in a large number of them the hyperkinesis is discontinuous and recurrent, and is not a constant concomitant of the spastic state. Temporary cessation of, or apparent recovery from, "chorea" is no valid reason for regarding the case as rheumatic.

The relative predominance of chorea and muscular spasm in cases of this kind is very variable. In many of them chorea is the only obvious symptom, the pyramidal tract having been but slightly affected, or having made a fair degree of recovery; nevertheless a careful examination of the nervous system will show that a residual pyramidal lesion exists. A child of this type (Cases 7, 8, 9, and 10) is liable to a diagnosis of "chorea" in which the symptom has not been sufficiently distinguished from the disease, and consequently to a course of extremely inappropriate treatment. If one of these children is observed over a number of years, it is usually found that the function of the pyramidal tract tends towards recovery; should the evidence of the residual lesion disappear altogether, the patient will merely present the clinical picture of symptomatic chorea. Cases of this kind, together with a number who may never have shown evidence of pyramidal defect, compose the type of chronic or recurrent chorea to which attention is especially drawn in this paper, with the suggestion that it may be more common than is usually supposed. In the majority of these children the hyperkinesis appears to have been first noticed in the second or third year. The resemblance which it bears to normal infantile movement is likely to prevent its recognition at an earlier age. In a certain number of them, however, some evidence of retarded development of motor functions will be obtained; when present this is of considerable diagnostic importance.

The cases recorded form links of a chain leading from obvious cerebral lesions, associated with chorea, to cases of pure symptomatic chorea, and indicate the existence of a class of choreas due to residual cerebral lesions. The pathogenesis of these cases is obscure, and is susceptible of the same variety of interpretation as that of cerebral diplegia, over which so much recent controversy has arisen. The work of P. Schwartz [7] has led many, who were inclined to attribute the cause of cerebral diplegia to prenatal factors, to the conclusion that the majority are the result of intracranial hæmorrhage during birth. The evidence which he brought forward is mainly drawn from autopsies on infants who were stillborn or who died shortly after birth; its application to infants who have survived is by inference, their symptoms being reasonably explained as the results of similar but less extensive lesions. According to Schwartz, the hæmorrhage by which these lesions are occasioned is not meningeal but intracerebral. It frequently takes the form of bilateral petechial hæmorrhages in tributaries of the vein of Galen, around which necrotic areas in the white matter subsequently develop. A common situation of the hæmorrhage was the vena terminalis; as a result of hæmorrhage from this vein necrotic areas were found in the basal ganglia, particularly in the head of the caudate nucleus. In many of the brains examined it was found that both types of lesion existed simultaneously. A number of pediatrists have attributed the cortico-spinal lesions in Little's disease to small hæmorrhages of this kind in the white matter. The lesions which would result from petechial hæmorrhages in the basal ganglia arising from the vena terminalis appear to offer an equally reasonable explanation of the incidence of some, at any rate, of the cases of residual hyperkinesis. The common, but inconstant, association of slight pyramidal lesions with hyperkinesis would be well explained by an ætiology of this kind.

Differential Diagnosis.

It is not possible in every case of symptomatic chorea to determine the exact nature of the disease at first sight. Instances will arise where it is advisable, while maintaining an open mind as to the precise diagnosis, to treat the case as one of Sydenham's chorea ad interim. There are certain points, however, which may be of great assistance in assessing the probabilities of the diagnosis.

(1) *History of Early Retardation.*—A large proportion of residual cases will give a history of delay in walking, talking, learning, &c., though this will not be obtained in post-encephalitic cases. The subjects of Sydenham's chorea tend to be of superior mental development, and a history of delay in reaching "milestones" should always raise doubts as to the presence of this condition.

(2) *History or evidence of rheumatic symptoms* is strongly in favour of Sydenham's chorea; no significance can be attached to their absence in an early case, as chorea may be the first rheumatic symptom.

(3) *Coexistence of athetoid movements* is sometimes observed in Sydenham's chorea, but it renders the diagnosis much less likely.

(4) (*a*) *Flaccidity of the hyperkinetic limb* and (*b*) *disturbances of the respiratory rhythm* are characteristics of Sydenham's chorea which do not appear to be simulated in the residual forms.

(*a*) In cases of "hemichorea," or of unequal distribution of the movements on the two sides, inequality of tone may also be observed. In Sydenham's chorea the limb most affected by the movements is very commonly hypotonic at some period of the illness, whereas hypertonicity of the affected limb, if it occurs, must be extremely rare. On the other hand, a combination of spasm and hyperkinesis in the same limb is a common feature of residual cases, while hypotonus is very unlikely, except in the presence of cerebellar symptoms.

(*b*) Czerny,[8] in 1916, drew attention to disturbance of respiratory rhythm, which he considered to be one of the earliest signs of chorea. According to his account a paradoxic movement of the diaphragm (ascent during inspiration), similar to that resulting from phrenic paralysis, occurs when the child makes voluntary deep inspirations. This paper seems to have received comparatively little notice, though occasional reference to "Czerny's sign" is found in the continental literature. O. Göttche,[9] in 1926, investigated this phenomenon with the aid of the X ray screen, and confirmed Czerny's observation that during natural quiet respiration the rhythm remained normal, but that if the child was made to take deep respirations certain changes in the rhythm took place. These were found to be of three kinds: (1) paradoxic movement, (2) immobility of the diaphragm, and (3) delayed movement of the diaphragm, which descended after the thoracic expansion was almost complete.

The respiratory rhythm has been investigated in all cases of hyperkinesis seen by the writer since the

appearance of Göttche's communication. Some disturbance of the coördination of thoracic and abdominal movements has been found in almost all well-marked cases of Sydenham's chorea, while it was never found in a child affected with habit-spasm or general fidgetiness. It was also absent in all cases of choreo-athetosis or other cerebral lesion, with the exception of one child suffering from post-encephalitic hyperpnœa. It is suggested that this sign may be one of considerable value in the differentiation of choreiform conditions, and that it deserves greater attention than it has as yet received in this country. Its utility is much increased by the fact that it is never likely to be reproduced in hysterical affections.

Mimeses.

A further complication in the differential diagnosis of choreic movements is provided by hysterical mimesis. Choreiform movement may be simulated somewhat closely, though probably not exactly, as a result of a mental process whereby the movements which a child has experienced or observed are reproduced in himself, usually—as in all hysterical manifestations—in pursuit of an unconscious end. This may take the form a heteromimesis in an otherwise healthy child, as in Case 11. Still greater difficulty is provided by an automimesis of a former attack, which may simulate a true relapse of Sydenham's chorea (Case 12). As in this case, the diagnosis may be revealed by the response to treatment, but the potential value of Czerny's sign is obvious. The question of hysterical automimesis must be considered in connexion with that of the persistence of choreiform movement after the subsidence of active disease, to which the late Dr. Leonard Guthrie [10] applied the term "residual chorea." In some cases this is probably accounted for by a true hysterical manifestation, an automimesis, replacing the original attack without any interval of recovery, occasioned by some unconscious desire such as to remain away from school. In the majority of cases it is likely that another process is responsible—i.e., that the pattern-reactions acquired during the illness continue to operate, new paths of lowered synaptic resistance having been developed *in the cortex* as the result of habit. Dr. T. C. Hempelmann [11] suggests that "in certain instances choreiform movements of the head and neck may become perpetuated as a habit-spasm." It seems legitimate to extend this conception somewhat, and to say that choreiform movement of any part of the body may become, after prolonged repetition, the mode of response which occurs as the result of recently conditioned reflexes. For practical purposes this process transfers the case from the second group which I have described into the first, and the treatment requires to be altered accordingly.

Summary.

Of the large number of children who exhibit some form of hyperkinesis a considerable proportion are not suffering from an active phase of Sydenham's chorea, and will be adversely affected by enforced inactivity or isolation. Insufficient recognition of this fact frequently leads to unnecessary removal of children from school.

Two principal types of hyperkinesis are to be distinguished from Sydenham's chorea: (1) non-choreic, including habit-spasm and general "fidgetiness," (2) choreiform, which are the result of some other condition (usually residual) or are hysterical in nature.

Symptomatic chorea may be the only persisting symptom of a residual cerebral lesion, as is shown by observation of cases in which the evidence of associated pyramidal defect has gradually disappeared. A possible relationship between some of these cases and the pathological conditions described by P. Schwartz is worthy of consideration.

The disturbance of respiratory rhythm described by Czerny is of value as evidence of an active phase of Sydenham's chorea.

Notes on Cases.

CASE 1.—Aged 8. Seen on May 22nd, 1926. Two weeks' history of fidgeting with right hand, but not using it. Movements of right hand were typically choreiform and the arm was hypotonic. There was irregularity of respiratory rhythm, not amounting to Czerny's sign. Was kept in bed; much improved on July 6th, 1926; recovered by August.

In July, 1927, he was brought up again with the complaint that the movements had started again; the question of his having St. Vitus' dance was being discussed at school. He was extremely fidgety, but the movements were not typically choreic. On being told to stop them at once he did so. The mother was assured that he had not got chorea and he returned to school.

Probably a case of Sydenham's chorea in 1926 and of hysterical automimesis in 1927.

CASE 2.—Aged 7½. Seen on April 27th, 1926. Fidgety for several months; does not use the right hand. Two years ago had "chorea" in the right hand. Growing pains. On examination choreiform movements were seen in all limbs, but were most marked on the left side. The right arm was hypotonic and exhibited very little voluntary movement. Treated by rest. When seen in July there was little hyperkinesis, but the right hand was hardly used at all. On August 27th recovery in both limbs seemed complete. An unusual case of Sydenham's chorea, which appeared to combine the features of "sthenic" and "asthenic" types (L. Guthrie) on the left and right sides respectively.

CASE 3.—Aged 10. Seen on June 22nd, 1926. Brought to hospital with the statement that she had chorea. Had fidgeted with the right hand and foot for five weeks. Involuntary movements, more or less choreiform but not typical, were present on the right side. The history showed that the mother had right hemichorea when pregnant; a playmate had right hemichorea a few months ago, and chorea seemed to be a frequent topic of conversation at home. The child was told that she had nothing the matter with her, and the mother persuaded to stop talking about it. The movements ceased during the next few days and did not recur.

A case of hysterical heteromimesis.

CASE 4.—Aged 11. Brought to hospital on Dec. 21st, 1926, with the history that during the last month he "fidgets the right arm and leg, but does not use them," and that "he has begun to stammer." In March of the same year "he fidgeted in all limbs," but had ceased to do so in May. Typical hemichorea on right side; right arm and leg hypotonic. Czerny's sign definite and persistent. Heart: Borderline enlargement with systolic murmur. Treated by complete rest; the movements gradually improved and had disappeared by February, 1927, but the stammer persisted.

A true relapse of Sydenham's chorea. A point of interest is raised by the possibility that the occurrence of the stammer may have been connected with the transition from the use of one hand to the other.

CASE 5.—Aged 4½. Seen on Jan. 30th, 1925. Symptoms: Twitching and picking movements of hands, irritable and emotional.

Signs: Incessant choreiform movement of both hands: fidgets with feet. No other abnormality in C.N.S. Heart normal.

History: In December, 1923, he had an illness in which the "left eye turned out." The movements began in 1924 and have been present from time to time since then. He does not get to sleep until 11 P.M., then sleeps for the whole night.

The movements began to improve during February. In March he was sleeping the whole night, and the movements were slight. During part of May he was drowsy in the daytime. When last seen in July, 1925, the movements were those of a mild case of chorea.

A difficult case, in which the diagnosis between Sydenham's chorea and encephalitis could not be made with certainty.

CASE 6.—Aged 11. Seen on March 12th, 1926. Symptoms: Spills things, speaks indistinctly, makes faces, and his legs give way. He was said to have been normal in every way at the end of 1924; the movements began gradually soon after this. They often improved for a time, but never passed off. In 1925 he attended a nervous hospital, diagnosis "chorea."

Signs: Typical choreiform movements, not very severe. Muscle tone and reflexes normal. I regarded him as Sydenham's chorea and treated him accordingly. Six weeks later I noticed the boy dribbling, and was told that this sometimes happened, and that he had some difficulty in swallowing. Two weeks later there was slight but appreciable rigidity of the right arm, which did not swing when he walked.

A case of encephalitis in which symptomatic chorea was the only manifestation.

CASE 7.—Aged 6. Brought to hospital in July, 1927. Said to have St. Vitus' dance and taken away from school.

slight choreiform movements of both hands were seen, rather slower than usual and occasionally merging into athetoid movements. Reflexes and tone were normal; Czerny negative. The condition resembled a mild attack of Sydenham's chorea.

The child had attended me some years previously. From the old notes it was found that she had been brought up in 1923 (aged 2½) because she did not talk or use the right hand. I had found slight spasticity of the right arm and leg, and had diagnosed a residual birth hemiplegia. The left arm had been tied up and recovery of function in the right arm took place rapidly, being almost normal in July, 1924.

A case of symptomatic chorea in a child who suffered from a cerebral lesion. If the previous history had not been obtainable she would probably have been regarded as Sydenham's chorea.

CASE 8.—Aged 6. Admitted to the Victoria Hospital for Children in March, 1924, under the care of Dr. R. C. Jewesbury.

Symptoms: Fidgets with the left arm and leg, is "twitchy," and uses the left hand very little.

Signs: The left hand was held in a peculiar position with the thumb adducted. Sudden twitchings of the left arm and leg were observed. There was slight dragging of the left leg on walking fast. The movements were more or less choreiform, but not absolutely typical. There was slight but definite increase of tone on the left side. Deep reflexes were usually increased on the left side, but the hyperkinesis made an accurate comparison difficult.

I considered the child to have a defect of the pyramidal tract and the corpus striatum or its central connexions. Light is thrown on this case by the previous and the subsequent histories.

Previous history: Had been an in-patient under Dr. Jewesbury in 1923 (aged 3). Symptoms: Twitching of face, movements of left arm, turning up of left eye; present for four months, getting worse. Signs: Walked unsteadily, backward in talking; weakness of left arm, leg, and internal rectus.

Subsequent history: The right arm was tied up during part of the day and the child began to use the left hand much better. She was, however, readmitted in September, 1925, having been diagnosed elsewhere as chorea. The twitching on the left side was worse; there was very definite increase of tone and deep reflexes in the left arm and slight increase in the left leg. Plantars: Flexor right, indeterminate (probably extensor) left.

This case seems to provide an undoubted example of symptomatic chorea, in association with a cerebral lesion which was either residual or so slowly progressive that its existence might escape notice even at the age of 8. I am much indebted to Dr. Jewesbury for kindly allowing me to examine and record this case.

CASE 9.—Aged 7. Was brought to the West End Hospital as a case of ? chorea, and admitted under the care of Dr. W. R. Reynell, by whose kind permission I examined him and am including him in this series.

Symptoms: Movements of face and of all limbs, most marked on the right side.

History: No evidence of retardation, but has had movements of this kind since infancy.

Signs: The movements were typically choreic, and on superficial examination the boy resembled a case of Sydenham's chorea. There was slight internal strabismus. Abdominal reflexes left brisker than right, knee- and ankle-jerks right brisker than left. Plantars: Definite flexor left; variable, usually atypical flexor right. There was some weakness of the right arm; no increase of tone could actually be appreciated, but it swung less than the left when he walked. Czerny negative. No evidence of rheumatism.

A case of symptomatic chorea resulting from a residual cerebral lesion.

CASE 10.—Aged 5¾. Brought to hospital in February, 1926, for weakness of legs and movements of arms; had been sent away from school as chorea. History: Details of delivery were not obtainable, except that he was "born blue with the cord twisted round his neck." He had appeared to the parents to be normal during infancy, but could not sit up alone until he was 1½. Talked well at 2. Had been fidgety all his life.

Signs: Typical choreiform movement of all limbs, which at times became more slow than usual; when lying quietly in bed they were occasionally athetoid in type. Abdominal reflexes absent. Deep reflexes unreliable owing to the movements, but usually more brisk on the left side. There was a slight degree of spasm in the left calf, and he usually walked with the heel off the ground, but could get it down when told to. Plantars: Flexor right, extensor left. The cerebro-spinal fluid showed no abnormality.

He improved quickly in hospital and was obviously much better when actively occupied. On discharge he went back to school. In December, 1926, movements were still present, the abdominal reflexes were just obtained, spasm of the calf was barely appreciable, and the left plantar reflex was indefinite. Czerny's sign was absent. Had he been examined first at this time there would have been little evidence of the pyramidal lesion. He was last seen on July 8th, 1927. He was still rather fidgety and the movements were roughly choreiform; no athetosis was seen. The reflexes were absolutely normal. He now presents the features of a mild symptomatic chorea, the diagnosis from Sydenham's chorea depending entirely on knowledge of the former physical signs.

A case of residual chorea or choreoathetosis (? birth hæmorrhage) associated with a pyramidal defect which recovered.

CASE 11.—Aged 9. The elder brother of Case 10. Had no symptoms until 1926. A few weeks after Case 10 returned home from hospital this patient began to fidget all over and speak less distinctly. He continued to go to school and did his work quite well. In October, 1926, he was brought to me because the school authorities said that he had chorea and should not attend.

Signs: Generalised hyperkinesis, not very severe; choreiform, but not absolutely typical; no abnormality of attitude. Czerny negative. The movements ceased when his attention was fixed on something else, and returned afterwards. He appeared to be much disappointed at being told that he had not got his brother's complaint and need not come into hospital, but must stop fidgeting. He returned to school, the movements ceased almost immediately and had not returned when he was seen in December, 1926.

An hysterical mimesis of the brother's condition.

CASE 12.—Aged 10. Brought to the West End Hospital on Feb. 8th, 1927, suffering from acute generalised choreiform movements, so violent that detailed examination was impossible. She appeared distressed and excited. The child had been an in-patient in a general hospital for two months in the previous autumn, suffering from chorea. She had been normal on discharge and remained so until the day before she was brought up to me, when a sudden return of movements took place. I regarded her as a relapse of Sydenham's chorea and recommended her for admission. Three days later she walked quietly into hospital with no sign of hyperkinesis or other abnormality. When I saw her next day she lay quietly in bed and could be examined with ease. She was made to get up and run round the ward: neither this nor any other activity led to any return of the movements.

Her condition appears to have been an hysterical automimesis of her previous attack of Sydenham's chorea, simulating a relapse. In recommending her for admission I had fulfilled the child's unconscious desire and cured the neurosis.

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THE SURGICAL SIGNIFICANCE OF CORPULENCE.

By R. J. McNEILL LOVE, M.S. Lond., F.R.C.S. Eng.,
LATE SURGICAL ASSISTANT, LONDON HOSPITAL; SURGEON TO THE MILDMAY HOSPITAL;
AND
W. F. CHRISTIE, M.D. Edin.

ADIPOSITY of simple or exogenous origin, being an aberrant nutritional state rather than a physical disease, is encountered quite as often in the practice of surgery as in the sphere of medicine. It is always the result of faulty feeding over a long period of time, but it can be cured by dieting. While the management of "thinning cures" must rest primarily with the dietitian, the penalties of being too fat and the results which may be expected from a course of weight reduction are of considerable moment to the surgeon.

Life assurance companies are continually preaching to the public the serious menace to health of over-nutrition. Their opinion is based partly on physicians' reports, partly on statistical evidence. From the purely surgical point of view, not half enough has ever been said against corpulency. Unnecessary and preventable, it creates disease, obscures diagnostic signs, influences operative technique, and detracts from an otherwise good prognosis.

Surgical Conditions Depending on an Obese State.

These may be classified according to their mode of origin, static, mechanical, and metabolic.

Static Effects.—One effect of carrying about a burden of dead weight on the body is to strain its weight-bearing structures. For instance, a certain degree of lordosis is necessary in order to compensate for the pendulous abdomen and so an excessive strain falls on the sacro-iliac joints. Many stout women complaining of an aching pain in the lower part of the back from this cause, especially severe after standing or walking, are referred to the gynæcologist for elucidation. Osteo-arthritis of hips and knees is a common companion of old age, being due to a gradual degeneration within the joint. The increased strain imposed by excessive weight-carrying precipitates the onset of this condition. It is widely recognised that flat feet are prone to occur with the advent of the menopause, a time when figures are notoriously apt to spread; indeed, obesity predisposes to flat feet at any age. The orthopædist sees many of these cases.

Mechanical Effects.—When an excess of fat is present in the body, although the bulk is contained in the subcutaneous tissues, omentum, and other of the large depôts, it will be found that a certain amount has infiltrated the muscles. This infiltration impairs muscular efficiency, the impairment being noticed first where strain is greatest; thus obesity predisposes to herniæ. Indirect inguinal hernia can only occur, of course, if a congenital sac is already present, but the direct or acquired type is commonly associated with fatty infiltration of the muscles and resulting "flabbiness." The umbilical hernia of adults furnishes another example; fat from the extraperitoneal cellular tissue protrudes through the stretched and weakened linea alba, eventually being followed by a dimple of peritoneum. Increase of intra-abdominal pressure, consequent on the deposition of more fat in the omentum, and mesentery, causes the hernia to enlarge progressively. Diverticulitis of the colon, also, is predisposed to by fatty infiltration and consequent weakness of the bowel wall, although the false hernial protrusion of mucosa may be difficult to demonstrate in the overladen appendices epiploicæ.

Metabolic Effects are not fully understood but, in some cases, obesity is associated with a diminution in rate of the metabolic processes. There is some evidence to show that the cholesterol content of the blood is greater in fat than in normal people, which may be the explanation of the higher incidence of gall-stones in the former; another factor which predisposes to cholelithiasis is the lethargy associated with the obese state. Again, acute pancreatitis occurs most frequently in fat subjects, although the reason for this association is obscure. The inter-relationship between obesity and the ductless glands may be mentioned in passing, particularly noticeable after the operation of double oöphorectomy. Freed by surgery from the dangers of ovarian disease, the development of corpulence at a later date with all its attendant misfortune is the rule. Conversely, sterility without other cause is not uncommon in the over-nourished; reduction of weight, not insufflation of the Fallopian tubes, is the more likely to effect the cure.

Obesity as a Factor in Obscuring Diagnosis.

Every clinician has felt, at times, the hopelessness of adequate palpation when confronted with an enormous jelly-like abdomen. Enlarged viscera and tumours can lie completely buried, while even in such conditions as acute appendicitis it may be almost impossible to detect muscular defence or feel an abscess. Percussion through some inches of fat is non-informing and sometimes misleading; we have seen a normal chest needled for fluid owing to impairment of resonance from this superficial cause. Pelvic examinations are rendered much more difficult; sometimes it is impossible to palpate the uterus. A lump in an adipose breast may be so masked that it remains a mere lump with no characteristics upon which to base a diagnosis.

The radiologist also has his difficulties, many an otherwise passable film being reduced to obscurity on account of fat limiting the penetration of the rays.

Influence of Obesity on Operative Technique.

A serious problem in connexion with operations on obese subjects is that of anæsthesia. The thick neck renders maintenance of an efficient airway difficult, and the fatty heart predisposes to cardiac failure. Owing to the relatively poor blood-supply to adipose tissue, local anæsthesia is unsatisfactory in that it predisposes to necrosis and consequent infection. In gall-bladder cases, a cholecystectomy of average difficulty may become a most formidable undertaking. Owing to the depth at which the surgeon has to work, blunt dissection is apt to degenerate into blind dissection, ligatures are tied under difficulty and perhaps insecurely, whilst accurate insertion of deep stitches may be impossible. The discriminating surgeon realises these handicaps and may therefore rest content with the palliative operation of removal of the stones and drainage of the gall-bladder.

The abdomino-perineal removal of the rectum furnishes another trite example, careful dissection in the floor of the pelvis in a fat male requiring the maximum amount of self-control, skill, and dexterity. In fact, the penalty of obesity in connexion with abdominal operations is a very definitely increased operative mortality, or a palliative instead of a curative operation.

The convalescence of stout patients is often prolonged as a result of delay in the healing of their wounds. In them fat oozes from the cut surfaces, the resulting combination of blood and liquid fat forming an excellent culture medium for the growth of bacteria. The edges of wounds made through fatty parietes should always be approximated with deep sutures, while a drain at each end encourages healing by first intention.

Prognosis after Operations on the Obese.

From the nursing point of view, 18 or 20 stones of helpless humanity may cause the stoutest heart to quail. The difficulty of lifting and turning such a patient, if the available staff is inadequate, reacts very unfavourably on convalescence. If the weather be hot, these invalids suffer from it more than ordinarily. Death from heat-stroke while swathed in cotton-wool and a large abdominal or breast

bandage is not unknown even in this country. The development of broncho-pneumonia, especially frequent after the administration of ether, adds to the nursing difficulties; yet one dreads to use chloroform in these cases on account of the tendency to acidosis. Post-operative lung complications should be anticipated by propping up the patient in bed as soon after operation as possible, using artificial means of keeping him there. The exhibition of stimulants and stimulating expectorants before they appear to be necessary is a sound prophylactic measure.

The effect of obesity on the late results of operative procedures varies with the disease. In one situation an excess of fat is sometimes welcomed by the surgeon—namely, the breast. Excision for carcinoma is rendered easier in proportion to the plumpness of the patient; moreover, the greater the amount of fat, the wider is supposed to be the margin of safety. This advantage, if so it be, is somewhat neutralised by the additional difficulty of diagnosis. Percival Mills noted in a series of cases that only 11 per cent. of the obese, as compared with 66 per cent. of the normally proportioned, were "well" six years after operation. Late diagnosis, so fatal in carcinoma, probably accounts for the difference. By the time that a stout woman feels a cancerous lump in her breast, the early stage of the disease is likely to have passed.

These few observations on the surgical disadvantages of the portly figure are worthy of reflection. Many more could be recorded without encroaching on its purely medical aspects, although the two are usually combined in the same person. The material for a campaign against corpulence is ample and convincing. In cases of emergency, the surgeon must make the best of a severe handicap; but in after-care, as well as in less urgent cases, an insistence on careful weight reduction has much to commend it.

Weight Reduction from the Surgical View-point.

Since fat comes from food, surplus fat must owe its origin to the same source. The cure, therefore, of over-nourishment is under-feeding. A short review of the results which can be anticipated from reducing diets is interesting and instructive. Fat can be removed quickly or slowly, in lesser or greater amounts. The practical utility of the methods may be seen from the following summary.

Rapid Methods.

	Expected *total* loss of fat in lbs.
Fasting, seven days, except for water ..	5 to 6
Fasting, 14 days, except for small amounts of protein	8 to 10
Greatly restricted diets—e.g., 21 days on "milk and potato cure"	

Slow Methods.

	Expected *weekly* loss of fat.
Restriction of fats and carbohydrates, slight increase of protein, great increase of roughage, over a long time	2 lb.

The difference between the two groups is similar to that which distinguished the hare from the tortoise in the fable. Rapid reduction methods show a poor return for all their violence of speed. A loss of 8 to 10 lb. of fat is seldom sufficient to effect a cure, while the personal effort required to obtain even that amount is great. Sometimes, as when obesity and high blood pressure are associated, a speedy reduction is imperative, but muscular weakness and the effects of acidosis may need to be combated. These are the two chief dangers.

The slow reduction plan, therefore, is more generally applicable; it is safe, it is sure, for 99 per cent. of the people who pursue it will become thin; the effects are permanent, since it teaches the reducer to avoid for all time the fat-forming elements in the diet. By removing 2 lb. every week or 20 lb. in ten weeks, repeating the course as necessary, the most ample of adipose coverings will disappear. It is important for surgeons, however, to understand the conditions under which satisfactory slow reduction can be attained.

The corpulent as a class love their meals, whatever they may declare to the contrary. Their endocrine glands may not be so active as those of thinner people, but the real basic cause of their adipose state is an indulgence, past or present, in the fat-forming articles of food. To hand to such as these a diet-sheet with the simple instruction "go hence and become thin," is quite useless; without personal encouragement and detailed dietetic guidance they will remain for a certainty adipose and inoperable to the end.

The first requisite for success, therefore, is time and patience on the part of the dietitian, as well as the will to conquer in the patient himself. By strengthening the latter, the surgeon is indispensable, but the actual dieting of these cases can be left quite well to a junior on his staff, whose whole-hearted interest and coöperation is assured. It is he, then, who should see that the reducing diet is suitable and properly applied, but the surgeon must retain the right of determining the amount of fat to be removed and in some cases, too, the rate of loss. The effectiveness of the dietetic prescription under such conditions of team-work is exemplified in the following case:—

Mrs. R. suffered from a small umbilical hernia, which was deemed inoperable on account of her adipose state. After losing 3 st. of fat by means of dieting, she was returned to the surgeon for operation; he requested, however, that another 2 st. should be removed before he would operate, making 5 in all.

The second requisite for successful weight reduction is the adoption of a scheme of dieting which can be adjusted easily to the particular requirements of the patient. By altering the quality of the food which is eaten, balancing the items and counting the calories, the fat person will lose his corpulence, but in so doing he need not be deprived of all the things he likes, nor made to eat all those which he never cared for.

The happiest results are obtained by building the diet to the individual in accordance with his food fancies and bodily requirements, rather a difficult task for any other than the professional dietitian. In most instances it will suffice for the house surgeon or family physician to prescribe a ready-made "skeleton diet"[1] worth about 1200 calories; this contains all those elements which are needed for the maintenance of health and the repair of tissue. If, while living on it, the patient loses more than 2 lb. a week, he may choose what he pleases from a "graded list of foodstuffs"[1] the extra quantity being limited to 100 calories a day; again the effect is noted after seven days, additions or subtractions being made accordingly. Every ten weeks a fortnight's respite from the strict régime should be granted.

Knowing the amount of fat to be lost, the surgeon can almost fix the date for his operation in advance. A steady loss of a stone and a half every three months is an average rate of progress; six stones need a year. There seems no limit to the amount of fat which can be removed. After emergency operations on the obese, the reducing diet can be commenced on the same day as the stitches are removed; the skeleton contains a sufficiency of vitamin C in the form of fresh fruits and green vegetables to ensure firm healing of the wound. Convalescence is too often regarded as a period for feeding up, whereas with stout people it should be used to inaugurate the process of thinning down.

In view of the penalties of corpulence and the comparative ease with which it can be reduced, it is incumbent on surgeons to keep in touch with over-nourished patients during their efforts to become thinner; in this way, fewer would suffer from surgical ailments or would be excluded from the benefits of surgery.

[1] Details of a skeleton diet with a graded list of foodstuffs appears in the Practitioner, May, 1928, by one of the authors.

THE INFLUENCE OF ULTRA-VIOLET RAYS ON INDUSTRIAL OUTPUT.

BY A. LISLE PUNCH, M.B., M.R.C.P. LOND.,
AND
RUSSELL WILKINSON, M.V.O., M.R.C.S. ENG.

With the collaboration of

R. STC. BROOKE, M.A.,
AND
C. S. MYERS, C.B.E., M.D., F.R.S.

DURING October, November, and December, 1925, an investigation was conducted into the influence of ultra-violet rays on the output of girls engaged in the manufacture of chocolates in the works of Messrs. J. Lyons and Co., Ltd., at Greenford, Middlesex. The treatment was applied by Dr. Lisle Punch and Dr. Russell Wilkinson. The data of output were obtained by Mr. R. StC. Brooke, psychologist to the firm. The general planning and supervision of the investigation and the preparation of most of the following report were the work of Dr. C. S. Myers, aided by a grant to the National Institute of Industrial Psychology from the Laura Spelman Rockefeller Memorial. The investigators are indebted to Mr. Julius Salmon, one of the directors of the firm, for the interest which he showed in the experiment and for the facilities which he gave for its smooth conduct, and to the British Hanovia Company for the loan of the necessary apparatus.

Twelve women employees of the firm, engaged in the manufacture of chocolates, volunteered for the experiment. This was divided into three observation periods: (*a*) a "pre-treatment" period of two weeks, (*b*) a "treatment" period of four weeks, (*c*) a "post-treatment" period of two weeks. Each girl was engaged throughout the entire experiment in making one and the same kind of chocolate, but the work of each differed in detail from that of her colleagues. The data of the output of each of the 12 girls were collected hourly throughout each of the three periods of observation. Three of the girls served as a control group. They believed that they were being given ultra-violet ray treatment, whereas in fact the ultra-violet rays were screened from them. Of the other nine girls one fell ill and was away from work for 17 days after three days' data had been collected from her during the pre-treatment period. Her records have therefore been omitted.

Treatment was given daily at 8 A.M. for four weeks. Of the 12 treatments the first four were on consecutive days, while in the second week three treatments, in the third week three treatments, and in the fourth week two treatments were given to each girl. Exactly the same procedure was carried out on the controls. The initial exposure was two and a half minutes for the whole body, back and front. Thereafter the exposures were increased gradually up to thirty minutes, according to the degree of erythema produced in each case. For the first four exposures each patient was treated individually with the air-cooled mercury-vapour lamp. Subsequently the girls were treated in batches of three at a time with the Jesionek lamps. The same lamps were used for the control group, but a sheet of "triplex" glass, 5/32 in. in thickness, was placed as a screen between the patient and the quartz burner. The absorption limit of this glass at this thickness being 3300, all the ultra-violet rays were cut off and no rays of shorter wave-length than 400 mm. reached the patient.

The findings had to be adjusted owing to the following circumstances: (1) During the pre-treatment and post-treatment periods of observation, the girls worked daily from 8 A.M. to 5.30 P.M. (with an hour off for dinner between noon and 1 P.M.); during the treatment period they began work at 9 A.M., as they were under treatment each morning between 8 and 9 o'clock. (2) At the start of each morning and afternoon spell of work the chocolate had to be tempered, so that the actual manufacture did not begin until 10 or 15 minutes later. (3) A rest pause of about four minutes was given during each spell of work. (4) A period of clearing-up occurred towards the end of each spell.* (5) Temporary absences from the room or from the works had to be allowed for.

* For this and other reasons the output during the last half hour of the day is not reliable; no records were therefore taken between 5 and 5.30 P.M.

The eight girls subjected to the ultra-violet rays, whose individual output throughout the three periods was regularly recorded, will be designated respectively by the letters A–H. They fall into two groups: (1) those whose output was evidently increased (A, B, C, D) upon exposure to ultra-violet rays; and (2) those whose output showed no change (E) or whose output was reduced (F, G, H) as the result

TABLE I.

—	Pre-treatment.	Treatment.	Post-treatment.
A	96·6	90·0, 97·4 } 93·7	108·0
B	110·2	107·6, 108·9 } 108·2	117·0
C	103·7	110·0, 107·4 } 108·7	107·6
D	117·8	120·7, 119·1 } 119·9	122·0

of the treatment. Of the latter group, it is noteworthy that H gave no reaction at all to the rays, while E gave a fair reaction, and F and G gave only average reactions. On the other hand, of the group that responded favourably to the treatment, A, B, and C gave extremely good reactions to the rays, while D gave a fair reaction. Table I. gives the average daily output in pounds per worker per fortnight. The total output of this group during the post-treatment period is thus 6·14 per cent. greater than during the pre-treatment period. The figure for A reaches 11·8 per cent.

The Subject's Own Statements.

The girls' own statements about the results of treatment are interesting. A said that she felt better and wanted more of the rays. B was most

TABLE II.

Pre-treatment.	Treatment.	Post-treatment.
1st week .. 87·5	3rd week .. 90·25	7th week .. 92·75
2nd " .. 93·75	4th " .. 94·25	8th " .. 87·25
—	5th " .. 92·25	—
—	6th " .. 91·00	—

enthusiastic; she found that she had more energy and that she could settle down more easily to her work. She also asked for a further course of treatment. C declared that she had slept better and that

TABLE III.

—	Pre-treatment.	Treatment.	Post-treatment.
F	90·9	85·7, 83·7 } 84·7	84·0
G	73·5	71·15, 68·25 } 69·7	69·0
H	86·4	82·6, 79·2 } 80·9	84·1

her appetite had improved during treatment, but that she felt tired after it had ceased. D said that she felt distinctly better and wanted more. E, whose output gave no evidence of being affected by the

TABLE IV.

—	Pre-treatment.	Treatment.	Post-treatment.
I	60·1	63·2, 65·4 } 64·3	63·9
J	56·2	56·7, 58·9 } 57·8	56·0
K	99·5	98·0, 103·9 } 100·9	101·7

rays, said nevertheless that her "nerves were better" after the treatment. But her output showed such wide fluctuations from week to week (as shown by the following data of average daily output) (Table II.) that no conclusions can be drawn.

F, a highly neurotic girl who was reported as "difficult" and unreliable, declared that she felt no better after the treatment; G was suffering from a cold both before and during treatment; H, who failed to give any cutaneous reaction to the rays, said that she felt no benefit. Table III. gives the

FIG. 1.

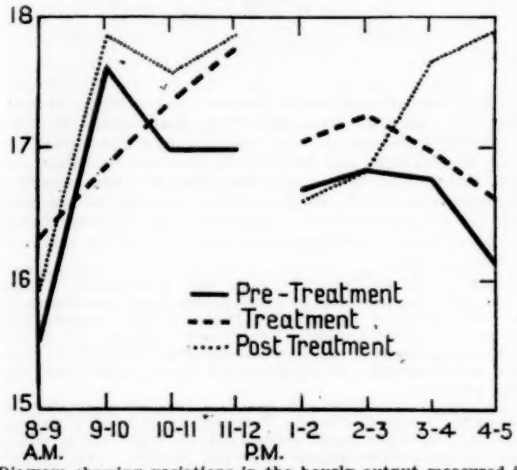
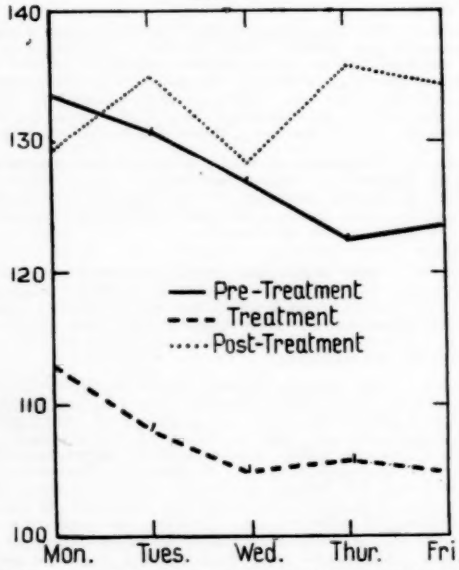


Diagram showing variations in the hourly output measured in pounds. (Worker D.)

average daily output of these girls per fortnight for the three periods.

The three girls of group (3), the control group, will be styled I, J, K. "I" claimed to feel better, but only while she was subject to "treatment"; her output improved correspondingly during that period, but fell off later. J felt little or no difference

FIG. 2.



Variations in the daily output, of Worker B, measured in pounds. The "treatment" curve represents the output of a working day of *seven* hours, whereas in the other two curves an *eight* hour day is worked.

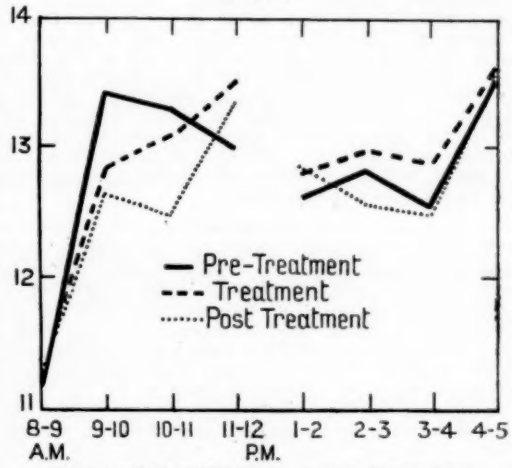
and showed practically none in her output. K, described as an excitable girl, fancied that she felt better for the treatment and showed a slight, but widely fluctuating, improvement, her average daily output during successive weeks being 98·75, 100·25, 95, 101, 106·25, 101·5, 100·5, 103. Table IV. gives the comparable data obtained for this group.

Any real improvements in the output of the girls of this group may be ascribed: (1) to suggestion, which was probably operative in I and K; (2) to the beneficial effect of other rays—e.g., infra-red rays, to which this group was daily subjected during the period of the "treatment"; (3) to practice. Mr. Brooke wishes to point out that an expert worker like J would not have had much recent experience of the particular "line" on which she was engaged throughout the experiment, but as her progressive rise in output was most manifest during the treatment period and fell off somewhat during the post-treatment period, her behaviour is also perhaps partly ascribable—although far less than that of I and K—to suggestion. According to whether we omit or include J, the percentage improvement in the output of this group is only 1·6 or 2·9.

Output of Workers who were Benefited.

The forms of the work curves of hourly and daily output obtained for each of the 11 girls during the three periods of observation confirm the results

FIG. 3.



Hourly output of Worker H, measured in pounds.

derived from the weekly data of output. The work curves of hourly output after treatment indicate for A a reduction of fatigue at the end of the afternoon spell; for C a reduction of fatigue at the end of the morning spell; and for D a reduction of fatigue at the end of both spells. All these workers belong to the group whose output was increased by exposure to ultra-violet rays. The lessened fatigue at the close of each spell of work during and after treatment is illustrated in the case of D in Fig. 1. Instead of the fall that occurs in the continuous curve towards the end of the morning's and afternoon's work, the two dotted curves generally show a well-marked rise, indicating lessened fatigue and the ability to spurt as the work draws to a close.

Similar beneficial results are revealed by an examination of curves of the *daily* output of workers of the same group. After treatment A returns on Monday keen and interested, and is thus more than able to counteract the loss of adaptation and practice due to the week-end absence. After treatment C shows less fatigue during the latter half of the week. D now reaches a far larger output than before on Thursdays. B manifests a strong tendency to abolish her previous progressive daily diminution in output from the beginning towards the end of the week. This improvement is seen in Fig. 2.

The Output of Workers who were not Improved by Treatment.

A study of the curves of hourly output reveals in E after treatment a poorer start in the morning and afternoon, and greater fatigue towards the end of the

afternoon; in F and G a poorer start in the morning, in G greater fatigue in the afternoon, and in H a slower improvement or an actual lessening of output during the early hours of the morning and afternoon. The curves of daily output indicate in F and G a more adverse "Monday effect" after treatment. Accompanying these deleterious signs, there are certain tendencies which otherwise might have resulted in increased output. E, F, and G all show in the hourly output curves after treatment a speedy and progressive recovery from their initial bad start in the mornings. H shows an increased ability to spurt during the last hour, especially of the morning spell (Fig. 3). The daily output curve of E, whose output showed no clear evidence of increase after treatment, indicates a less marked fatigue towards the end of the week after treatment.

Control Group.

J showed a worse initial start in the morning and very little evidence of any effect of the pretended treatment in the hourly and daily output curves. K's daily output towards the end of the week fell off considerably during "treatment," but became far better after it, although worse at the start. During "treatment" her hourly output curve showed a worse start, but reached a higher level in the afternoon; after treatment her output was higher towards the end of the morning and afternoon spells. I showed the same lessening of fatigue towards the end of the spells, and a more uniform output from Monday to Thursday. These differences, however, are slight and are probably ascribable to suggestion and to accidental variations.

Conclusions.

The effects of ultra-violet rays on workers show *great individual differences*. Four (Group I.) of the eight girls investigated showed a favourable effect, resulting in an average increase in their output by over 6 per cent. (in one worker 11·8 per cent.), and in consistent reports that they felt in considerably better health. Three of these four workers gave an extremely good cutaneous reaction to the ultra-violet rays. Of the remaining four (Group II.), one showed no change in output, and three an adverse effect. (One of these three workers was highly neurotic; another was suffering from "colds." A third failed to give any cutaneous reaction to the rays.) Of the other three girls of Group II. who did not respond favourably to treatment, one gave a fair and the two others only average cutaneous reactions. With one exception the workers in Group II. failed to notice any improvement in general health.

It is important to bear in mind that the works in which this investigation was conducted are of a model character, situated at Greenford, Middlesex, and that the workers are of a superior type, living in the neighbourhood where they enjoy what almost amounts to country sunlight. More striking results might be expected if the experiments were repeated on a larger scale in a factory in some poor district of a crowded city. The employment of a control group is essential.

ROYSTON COTTAGE HOSPITAL.—The Prince of Wales recently opened a new children's ward in this Hertfordshire institution, which has always been free from debt. There is a hospital workers' league which contributes £1000 a year to the funds. Since it was opened in 1870 it has constantly been full and 25 per cent. of the patients have been children.

IMMUNISATION AGAINST DIPHTHERIA.—The Manchester Public Health Committee has reaffirmed its approval of a report by the medical officer of health, Dr. Veitch Clark, regarding immunisation against diphtheria. The medical officer recommended that a scheme for the free inoculation of children be put in operation by the Public Health Committee acting with the Education Committee at the school clinics, the welfare centres, and the civic buildings. Only children would be treated whose parents permitted.

Clinical and Laboratory Notes.

LEAD SHOT IN APPENDIX.

BY S. GILBERT SCOTT, M.R.C.S. ENG., D.M.R. & E. CAMB.,
RADIOLOGIST IN CHARGE OF THE X RAY DEPARTMENT, LONDON HOSPITAL.

MOST radiologists will have come across, at one time or another, unsuspected lead shot in the appendix, swallowed with game. A single pellet or even several need not necessarily give rise to inflammation, but in the following cases this was the sequela. For two reasons I consider them worthy of report: chronic appendicitis as a diagnosis was not suggested in any of them, and they were all seen within a period of four months.

CASE 1.—A middle-aged female had complained of pain in the right hip for some 16 years, which had been diagnosed by the numerous consultants, both in this country and abroad, as osteo-arthritis. Curiously enough, no radiographic examination had been carried out. Visits to various spas and treatment of all kinds led to no benefit and the pain persisted.

A general radiological survey was eventually suggested for a possible infective focus. This survey showed a normal hip-joint but eight small shadows in the right pelvis and a mass of calcareous glands over the sacrum. An opaque meal further demonstrated the shadows to be eight lead pellets in a fixed appendix. Operation confirmed the findings and the patient's symptoms disappeared. The patient confessed a weakness for grouse.

CASE 2.—By a curious coincidence this patient was sent to me for a general radiological examination the following week, on account of multiple arthritis and vague abdominal pains of some years' duration. Here again eight lead pellets were located in various parts of the appendix, which, together with the cæcum, was firmly fixed. Operation confirmed the findings. A liking for partridge, a good partridge season, and faulty mastication were responsible for the condition.

CASE 3.—The symptoms in this case, including melæna, suggested a new growth of the rectum. An opaque enema was advised, but no radiographic evidence whatever was forthcoming of this condition. In the course of the examination, however, two lead shot were demonstrated in a low-lying appendix. An operation showed the appendix fixed to the pelvic colon, the two pellets being in the extreme tip.

CASE 4.—Frequency of micturition was here responsible for the diagnosis of some pathological condition of the bladder, or possibly calculus. The radiographic examination revealed no stone but a single lead pellet was detected in the appendix, which at operation was found fixed to the bladder.

CASE 5.—Vague abdominal symptoms were complained of in this case. The doctor, as "a shot in the dark," diagnosed the case as the menopause reflex, but was anxious to exclude any abdominal lesion. Here again a single lead pellet was seen in a low-lying appendix, which operation proved to be fixed to the right ovary.

CASE 6.—This case was referred to the Brook-street clinic for a general medical investigation. In addition to vague abdominal symptoms, there was a history of hæmatemesis. Radiographically no organic lesion of the stomach was detected, but two pellets were seen in the appendix, which in this case was quite free. An unsuccessful effort was made to manipulate the foreign bodies out of the appendix under the screen—I consider this manœuvre legitimate if there is no evidence of inflammation. In this case operation was not advised. A further radiographic examination of the appendix eight weeks later demonstrated that the pellets had been dislodged and passed.

Nature appears to have carefully camouflaged the condition of the appendix in these cases and the true state of affairs was only arrived at in the course of a general radiographic investigation. As would be expected, the condition is found more frequently in private patients. Now that a general medical overhaul, irrespective of symptoms, is possible, there is little doubt that more cases of this condition are detected than formerly. As previously mentioned, it is possible to have a pellet lodged in the appendix

without giving any radiological evidence of inflammation such as fixation and, as illustrated in the last case, it may become dislodged and pass per vias naturales.

Mastication must be very deficient nowadays. Anyone having a gold denture or even metal teeth fillings—and there are very few who have not—become conscious of the presence of any other metal object in the mouth, as this creates a miniature electric battery and a mild electric current. In any case, apart from this, the presence of a lead pellet in food should be readily appreciated by anyone who masticates this food to a reasonable extent. This faulty mastication is well illustrated by a girl presenting herself at hospital stating that she *thought* there was something stuck in her throat. A radiographic examination demonstrated the presence of a full-sized open safety-pin, which she had no recollection of having swallowed.

PARAPHENYLENE-DIAMINE LABYRINTHITIS.

BY E. WATSON-WILLIAMS, *M.C.*, M.CHIR. CAMB., F.R.C.S. EDIN.,

HONORARY SURGEON, EAR, NOSE AND THROAT DEPARTMENT, BRISTOL ROYAL INFIRMARY.

Paraphenylene-diamine is the essential ingredient in several popular hair dyes or "restorers." The dermatitis which in susceptible subjects may follow its use has already given rise to considerable litigation: it is perhaps well, therefore, to recognise that other tissues may be damaged by this drug, which appears to have a selective action on the labyrinth. Attention has been drawn to this in France by Dr. Paul Laurens:—

"Acute cases begin with vague giddiness, sometimes accompanied by nystagmus; tinnitus appears later and is incessant. In the chronic form the same symptoms occur, and gradual deafness ensues. . . . This poison must not be forgotten when treating obscure cases of toxic labyrinthine disease. The condition improves slowly when the dyeing is stopped." [1]

The following is an illustrative case:—

Mrs. S. R., aged 33, was sent to me early this year. In her own words, "I have a noise in the left ear, and it makes me giddy and sick all the time." The ear had recently become "quite deaf." The first signs of trouble had appeared in 1926, when attacks of tinnitus and "gastritis" began to occur; but during the last three months there had been no remission, and tinnitus was severe and incessant. True rotatory vertigo followed any movement, with a tendency to fall to the left. During this period also she had had no appetite for breakfast, though other meals were less affected.[2]

On examination both drums were found to be retracted. There was slight nerve deafness in the right ear, very severe in the left. Rinne's test was positive on both sides, and in Weber's test the sound was referred to the right (good) ear. The left labyrinth appeared insensitive to caloric stimulation. There was no nystagmus. Inflation by means of a catheter showed that the Eustachian tube was normal, and produced no change at all in the symptoms.

While discussing the possible causes of labyrinthine deafness coming on rather rapidly in an apparently healthy woman (Wassermann reaction negative), I noticed there was a rash round the neck, more or less limited to the skin above edge of the collar of her blouse. This had been present on and off for more than a year, but exactly how long the patient could not say as, although it itched rather at times, it never got very bad and did not respond to anything she had done for it. On further inquiry I found she had been wearing almost daily, and quite regularly during the winter, a brown fur collar. This was kindly analysed for me by Mr. A. L. Taylor, M.P.S., who was able to determine the presence in it of paraphenylene-diamine in demonstrable quantity.

The fur, having been analysed, ceased to form part of her wardrobe. She was advised to avoid all dyed fur and (if tempted later) hair restorer, and a laxative was ordered. In ten weeks the hearing was normal, vertigo had ceased, appetite had returned, and tinnitus had almost entirely disappeared; the neck rash had vanished soon after leaving off the fur. There seems little doubt that the dye in the latter was the *fons et origo mali*. If so, it appears that dye in fur can, to a susceptible subject, be as dangerous as when applied to the scalp; doubtless, this was a relatively mild case of poisoning.

[1] Paul Laurens: Bull. d'Oto-Rhino-Laryng., July, 1922, quoted from author's abstract, Jour. of Laryngology, 1923, xxxviii., p. 328.

[2] E. Watson-Williams: The Significance of Vertigo, Bristol Med.-Chir. Jour., 1927, xliv., 119; Aural Vertigo, THE LANCET, 1927, ii., 180.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF COMPARATIVE MEDICINE.

AT a meeting of this Section held on May 23rd, with Sir D'ARCY POWER, the President, in the chair, a paper on

APLASTIC ANÆMIA

was read by Dr. J. P. MCGOWAN. It was largely an account of researches at the Rowett Research Institute, Aberdeen, on benign aplastic anæmia in pigs. He said that just as in the hyperplastic conditions there were secondary or benign anæmias on the one hand, and primary malignant anæmias—e.g., pernicious anæmia—on the other, so in the aplastic variety there were benign or secondary aplastic anæmias, such as that occurring in the pig, and malignant anæmias, such as those following benzol poisoning. In pigs aplastic anæmia seemed to arise essentially from a deficiency of iron in their milk-supply, relative to its protein content. The onset of the disease was at birth, and it reached its climax at about the third week thereafter. By this time the animals affected had become abnormally fat, "stocky," and pale; they were subject to diarrhœa, and had a heaving or pumping form of respiration. At this stage, too, they showed profound anæmia, with a colour-index of less than 1. Sudden death was common, and the chief post-mortem findings were great cardiac dilatation, and effusion of fluid into all the serous cavities of the body. Fatty change was seen extensively in the lobules of the liver, and the lungs were œdematous. The blood changes were leucocytosis, of fairly marked degree, with a good deal of anisocytosis and slight poikilocytosis. Films also showed numerous macroblasts and normoblasts. Megaloblasts were absent, but there was a marked polychromasia. Only in the last few days of the life of the pig was the skin noticeably jaundiced. In its first phase the disease seemed to be due to lack of iron, while in its second damage to the liver of a mechanical type appeared to be the determining factor. The persisting nature of the cause possibly accounted for the aplasia being more marked than in other secondary anæmias.

In discussing the changes present in this form of aplastic anæmia Dr. McGowan brought forward evidence to show that erythropoiesis was essentially, even in the mammal, an intravenous phenomenon and that the megacaryocyte, by amitotic fragmentation, played a predominant part in the production of erythroblasts from which the erythrocytes were formed. Jaundice of an obstructive type occurred as a terminal phenomenon in this condition. Nevertheless, the serum, when tested by the ordinary van den Bergh technique and reagents, gave a delayed direct and indirect reaction only. It was found, however, that dilution of the serum in buffer solution, instead of distilled water, or the use of a less dissociable acid than HCl, such as acetic acid, in the preparation of van den Bergh's No. 1 solution, allowed of an immediate direct reaction being obtained. The alcohol used in the ordinary van den Bergh technique for the indirect reaction possibly acted in the same way by lessening the dissociation of the HCl in the reagent and so affording a favourable H-ion concentration for the development of the colour change. It

seemed therefore that there was a case for reconsidering the interpretation of the clinical significance of the van den Bergh reaction.

Comparing aplastic anæmia in the pig with pernicious anæmia in the human being, Dr. McGowan pointed out that in both conditions there was general adiposity, and also a fatty change in the centre of the liver lobules. From a consideration of the facts relative to aplastic anæmia Dr. McGowan had some time ago arrived at the conclusion that there was a complementary action existing between the liver and bone-marrow in relation to blood formation, amounting almost to a single-organ activity. Subsequently Minot and Murphy had published their results on the beneficial results of liver feeding in pernicious anæmia. Feeding of liver to a pig affected with aplastic anæmia had been undertaken, with resultant very marked improvement in the blood condition. From a consideration of the liver and bone-marrow changes and the result of liver feeding in this benign aplastic anæmia as compared with those in pernicious anæmia Dr. McGowan deduced that an organic lesion of the bone-marrow was an essential condition of the pathogenesis of the primary or malignant blood conditions. Peabody, in America, suggested that in human pernicious anæmia, the giving of liver acted by causing maturation or ripening of the precursors of the red blood cells. Dr. McGowan thought that while this might be part of its action where there was deficiency of iron, it could not be its whole action in pernicious anæmia, in which the betterment consisted in a change from the embryonic to the adult blood forms. Such transformation from primitive to definitive blood type in the embryo was associated with the onset of hepatic erythrogenesis. Therefore it seemed that there was some deep-seated biological relationship between the tissues, quite apart from a ripening.

Dr. H. P. BAYON pointed out that the pig disease under discussion began with a hyperplasia of the marrow, the aplastic anæmia being the terminal symptom rather than the primary or main process. What ought to be stressed in this disease was the state of the bone-marrow. When a state of exhaustion of bone-marrow was reached aplastic anæmia supervened.

Discussion.

Dr. ALFRED PINEY said that aplastic anæmia meant an anæmia due to aplasia of bone-marrow. But he gathered that these pigs developed anæmia, and later had an aplastic bone-marrow. Normally, the name aplastic anæmia was applied to a condition in which active regeneration by the marrow as a whole was absent. These pigs, however, had leucocytosis, which was a sign of activity in the marrow. There were also other indications of activity. He therefore preferred to regard the condition as a severe secondary anæmia, in which the blood-forming organs might ultimately become aplastic. The marrow was dark-red in colour, as it was in pernicious anæmia, and was also very cellular. Photographs shown by Dr. McGowan clearly showed the existence of an advancing edge of red marrow. If it was truly an advancing condition, then "aplastic" seemed the wrong term to use. To call an anæmia which started with such a marrow "aplastic" was to invite confusion; it only became aplastic terminally. He would be interested to learn what was the effect of giving these pigs the protein-free liver extracts which were now successfully used in pernicious anæmia.

Dr. A. KNYVETT GORDON also considered that the condition was due to a proliferative change which ultimately became aplastic. Pernicious anæmia in man was a very different disease clinically from aplastic anæmia. The latter could be produced by the injudicious use of X rays in the treatment of leukæmia, and sometimes proved fatal. An aplastic condition of the bone-marrow was likewise met with in the terminal stage of sepsis. Aplastic anæmia was curable, and it must be recognised as a very different condition from pernicious anæmia.

Dr. PARKES WEBER said he considered that the sections of liver demonstrated by Dr. McGowan showed central acinous atrophy. He suggested that perhaps Dr. McGowan would work out the changes in the liver of these pigs and compare them with the various kinds of central acinous atrophy of the liver in human beings.

SUBSECTION OF PROCTOLOGY (SECTION OF SURGERY).

AT the May meeting of this Subsection, with Sir CHARLES GORDON-WATSON, the President, in the chair, Sir WILLIAM WHEELER opened a discussion on the

EARLY DIAGNOSIS OF CARCINOMA OF THE RECTUM AND COLON

by calling attention to the late diagnosis usually made, the high final mortality, and the relative frequency of cancer of the distal parts of the gastro-intestinal tract. He maintained that in just these parts an early diagnosis ought to be made, for from the diagnostic point of view cancers of the distal colon were external cancers. Yet most surgeons had the same lamentable experience of late recognition. In a series of 47 consecutive cases in his own experience 24 had had carcinoma of the colon and 23 of the rectum. Of the former, half had been inoperable, and of the latter only 7 had been operable. The results of early operation were very good, and the operative mortality had become negligible. The weak link in the diagnostic chain seemed to be the lack of thorough examination in suspected cases. On an average, ten and a half months had elapsed between the first consultation with a doctor and the final diagnosis. Allowances must be made for the busy practitioner when, as often happened, the predominating symptoms in early cancer of the lower bowel pointed to mischief high in the abdomen. Normally certain foods produced peristalsis; in the presence of a neoplasm accompanied by spasm of the pylorus there might be pain after food, some nausea and a little vomiting, so that a diagnosis of cholecystitis or even of displacement of the uterus might quite reasonably be made. Many cases had been X rayed for dyspepsia when the cause of the trouble lay within easy reach of the rectal finger. The number of cases mistaken for piles was notorious. Rectal examination should always be done bimanually, and as thoroughly as the vaginal examination of the gynæcologist. Insufficient attention had been drawn to the simplicity of a sigmoidoscopic examination and to the means of overcoming the small difficulties encountered. The sigmoidoscope had been well described as "an elongated finger fitted with a human eye." If the sigmoidoscope were more used these growths might often be noticed in a precancerous stage. No examination was complete without an opaque meal and enema, but the general practitioner should be warned that radiologists were not miracle mongers, nor their pronouncements akin to the gospels. It was a great mistake to take a radiological report as proof positive of the presence or absence of a new growth; 90 per cent. of palpable growths were felt per rectum. Of growths in the sigmoid 24 per cent. were palpable, but the examiner was much more likely to feel the accumulation of fæces above the growth. Size bore no relationship to malignancy. Between a cancer and a tuberculoma there was no possible means of distinguishing, and actinomycosis was only to be diagnosed when a sinus had actually discharged sulphur granules. Growths of the splenic and hepatic flexures were difficult to feel, but might be detected more easily if the patient stood up and bent forward while the surgeon examined him from behind. There was no doubt that two independent growths might be found in the same individual at the same time.

A positive benzidine test was good enough for him, said Sir William, as an indication of occult blood. A patient with a distal cancer of the intestine might remain in good health until a very late stage, as absorption was not interfered with, but growths on the right side of the colon produced marked anæmia and toxæmia even without occult blood in the stools. There was some evidence that this condition was due

to the activity of the *Bacillus welchii*, and that the antitoxin of this organism was of some value. Anæmia in a case of carcinoma of the colon was never a contra-indication to operation, in contrast to patients with gastric growths in whom anæmia always meant wide local infiltration or metastasis. The blood-sugar tolerance curve was said to differ in cases of gastro-intestinal cancer from that in cases of cancer elsewhere. The Wassermann test must not be neglected, although he himself had never seen a stricture of the rectum or colon attributable to syphilis. Exploration should be the last thing of all in an investigation. If there were occult blood in the stools, and the symptoms were suspicious and the X ray negative, the case should be watched and investigations repeated. If, however, there was a palpable tumour or the X ray was also suspicious, the case should be explored.

The crux of the whole problem was, however, what symptoms should make a doctor suspicious enough to insist on X ray, sigmoidoscopic, and other investigations. Change in bowel habit was mentioned by every authority. A man who had been able to eat and drink what he liked insidiously became a dyspeptic when a cancer of the stomach was developing. In the same way the cast-iron regularity of the bowel habit disappeared in cancer of the intestine. A careful history must be taken. Age did not help much; cancer of the rectum might appear before the age of 20, but cancer of the colon was not apt to appear early. Visible or palpable peristalsis proved that there was obstruction somewhere. The rectum was very intolerant of foreign bodies, and teasing tenesmus with mucus discharge was a prominent feature of later date. There were no pathognomonic signs, only a conglomeration of factors. For the patient who would not seek medical advice and who doctored himself for his trivial symptoms nothing whatever could be done.

The Help of the Pathologist.

Dr. CUTHBERT DUKES said that only in the microscopical examination of a fragment of the tumour could the pathologist be of any real assistance. There were at present no reliable means of recognising those changes in the blood which must accompany cancer from the first. Alterations in the urine appeared too late, and there were many other possible sources of blood in the stools. It was worth while bearing in mind that innocent adenomata were frequently precursors of carcinoma, and that early bowel cancer was often accompanied by a cluster of sessile adenomata and patches of epithelial proliferation of the mucous membrane. The piece removed for examination should be from the very edge of the tumour, showing normal side by side with neoplastic tissue. Reliance could not be placed on the morphology of individual cells; the general arrangement of the epithelium must be considered, together with the only infallible sign—the intrusion of a typical epithelium into regions where it was not normally found. The piece should not be squeezed or crushed or cut during removal, but should be taken out by dissection or by a punch and dropped into fixative as soon as possible. If the surgeon insisted on an initial report from a frozen section, he must be prepared for that report to be non-committal. He must also remember that the report referred only to that part of the tumour sent up for examination, and that a negative report did not necessarily mean that the whole tumour was benign. Dr. Dukes then showed a series of beautiful preparations in illustration of his points that the only certain sign of cancer of the bowel was invasion of the subjacent tissues, that the superficial diameter of an ulcer or tumour was absolutely no indication of the depth of its penetration, and that satisfactory specimens for examination could be removed by special instruments.

The Assistance of Radiology.

Dr. GRAHAM HODGSON said that an efficient radiogram could confirm suspicions, localise the growth, and define its extent. The most important signs were: filling defect, localised absence of peristalsis, and distension proximal to the stricture. To detect the more important smaller filling defects the oblique view was essential. An antero-posterior view might give the appearance of a growth at the upper end of the rectum when a complete examination would show that the trouble really lay in the sigmoid or rectosigmoidal junction, with ballooning of the sigmoid and rectum. It was impossible to exclude a filling defect until every inch had been examined in direct and oblique views, as Dr. Hodgson illustrated by slides. Another useful method was the dual exposure. The bowel distended with warm fluid showed rapid peristalsis, and if two photographs were taken at intervals of a few seconds without an intervening respiration a peristaltic wave would be recorded. Over the site of a growth the double shadow would be absent, owing to the localised absence of peristalsis. Apparent filling defects might be due to inadequate emptying of the bowel before the enema or to localised spasm. The latter could be overcome by lowering the enema can to a foot or so for five or ten minutes, meanwhile massaging the spasm, which would then gradually relax. A true filling defect might be due to adhesions. A hard inspissated mass of barium proximal to a colotomy opening was a surgical complication which might result if operation were performed within a day or two of the barium examination.

Dr. A. F. HURST said that improvement in medical education was the most important measure of all. It was appalling how late these cases reached physician or surgeon. In the vast majority the condition could be diagnosed six months earlier than it was. Warning signs were definite abdominal symptoms after a period of health, discomfort, and some change in the regularity of the bowel. In only 5 out of 25 cases in his experience had naked eye examination of the stools showed any abnormality, but occult blood was one of the most constant signs, although it might also be present in tuberculosis, chronic intussusception, and localised adhesions. It was very important to realise that in some rare cases of advanced growth the barium enema might show absolutely nothing. The shape of the filling defect helped to distinguish a growth from other conditions. Until the sigmoidoscope was recognised as being an instrument for the physician and the general practitioner, a large number of cases would be missed. In the earliest cases of all the diagnosis must be made on the history and the presence of occult blood in the stools. A patient might complain of a feeling of discomfort which was relieved when he felt gas pass through some local area with a gurgle. Now that many patients recovered from ulcerative colitis, stricture following this condition was less rare and might simulate a growth.

Mr. J. P. LOCKHART-MUMMERY said that the whole problem now came down to early diagnosis; operative results were admirable. X rays should never be taken as negative evidence, but were very useful as confirmatory. In his experience most patients would submit to an exploratory laparotomy, and he advised it in doubtful cases. The problem of getting cases early enough lay with the patient and the practitioner. The condition caused so few symptoms that patients often did not consult a doctor, and were most unwilling to submit to the unpleasant examination necessary to confirm the diagnosis. The general practitioner was realising the importance of the matter, but education of the public was very necessary.

Mr. W. B. GABRIEL suggested that annual medical examination would catch many cases early.

Mr. LIONEL NORBURY agreed with the value of routine examinations, and narrated two cases where the sigmoidoscope had revealed early growths quite unexpectedly in patients under 40 with a history of recent origin of piles. The fault did not lie with the practitioner but with the panel system which made rectal examinations quite impracticable.

Dr. CLAUDE GOULDESBROUGH confirmed Dr. Hodgson's remarks. He had overcome the difficulty

of overlapping shadows in many cases by raising the foot of the table, and having the enema pot on a level with the patient's body so that the barium trickled in very slowly. By turning the patient a little on one side the outline could be made clear. The patient's feet could then be lowered and the rectum slowly emptied, so that the sigmoidal outline appeared clear of the rectal shadow. A good idea of a small stricture could be obtained by syphoning back some of the fluid and then running it in again. Belladonna might be useful for overcoming spasm. Fixation of the colon was very important in showing that something was seriously wrong.

Mr. E. T. C. MILLIGAN said that adenoma and carcinoma might appear identical through the sigmoidoscope, but induration might be palpable. Palpation was therefore important, even if it involved opening the abdomen; otherwise a rectum might be removed for an innocent growth. No aperient or wash-out should be given before sigmoidoscopy, because this changed the appearances of the bowel contents, which were important. If normal fæces were seen through the sigmoidoscope it was some evidence against the presence of a growth higher up, and vice versa.

Reviews and Notices of Books.

TAYLOR'S MEDICAL JURISPRUDENCE.

Principles and Practice of Medical Jurisprudence. Eighth edition. Edited by SIDNEY SMITH, M.D., D.P.H., and W. G. H. COOK, M.D. London: J. and A. Churchill. 1928. Two vols. Pp. 900 and 964. £3 3s.

Taylor's "Medical Jurisprudence," the great classic of forensic medicine, has for 50 years been indispensable to two professions. At the present time a new edition is of peculiar value, since medico-legal questions of importance are under discussion and the relations of doctor and lawyer are in a critical stage of transition. The eighth edition maintains all the traditions of the book, while it keeps abreast of modern research and controversy. The last decade has seen legislative activity in many directions which concern medical men; to mention only a few statutes, the Coroners' Act, the Births and Deaths Registration Act, the Legitimacy Act, and the Midwives' Act, were the work of a single year. The new edition refers to many notable cases of recent times, such as Beard *v.* Director of Public Prosecutions, Rex *v.* Bateman, Rex *v.* Armstrong, and Rex *v.* Kynaston. Advances in medical and ancillary sciences have caused many changes in medico-legal technique, and have necessitated revision of the chapters on identification, injuries to the head, and injuries from fire-arms, among others. There is a good deal of new material in the section on fire-arms, describing the characteristics and identification of bullets and weapons. The chapter on bloodstains has been considerably altered; the guaiacum test is described, but is regarded as obsolete since the introduction of simpler colour tests with benzidine, phenolphthalein, and other bases. The action of these depends on the fact that there is a substance, probably a peroxidase, in the colouring matter of the blood which, in the presence of hydrogen peroxide, transforms them rapidly through oxidation from colourless bases to coloured salts. The benzidine test, which is perhaps the most satisfactory, consists of the application to the suspected material of a 10 per cent. solution of paradiamo-diphenyl in glacial acetic acid, to which has been added twice its volume of hydrogen peroxide. If the stain is due to blood, a deep blue colour immediately radiates out on to the filter paper on which the test is performed. Other substances (sputum, pus, and certain bacteria.) give a positive reaction, but never such a rapid one. This test, like all similar ones, is chiefly of negative value, and further examination is necessary to prove the presence of hæmoglobin. In spite of the advances which have recently been made in the study of blood groups, the precipitin test is still made the principal means for identifying human blood, and the possibilities of the agglutination test are regarded with caution. The toxicological sections have been largely rewritten, and the analyses made on Mrs. Armstrong, Mrs. Greenwood, and the victim of the Seddons are given in full.

The department in which most alteration has been necessary is that dealing with the legal position of the insane. Several judicial pronouncements and the results of certain trials, notable that of Ronald True, have thrown the question of criminal responsibility in mentally disordered persons into prominence, and in each profession a body of opinion is advocating revision of the rules in McNaghten's case. The findings of the Lord Chancellor's Commission of 1922 are given in full, with impartial comments on the different views expressed by various medical and legal authorities, especially on the question of impulse. The use of the word "insanity" where the earlier edition gave "lunacy" marks a step forward. The wood-cuts of the early editions were nearly all omitted from the fifth to make room for more letter-press, and because Hofmann's "Atlas of Legal Medicine" illustrated the book better than its own pictures could do. Now, illustrations have appeared again, chiefly in the sections on identity and wounds, and they are certainly welcome. The format of the work is much improved by the innovation of neat, dark-blue covers and a clearer fount for the cross and side headings and for the index words in the table of contents.

TUBERCULOSIS.

Modern Aspects of the Diagnosis, Classification, and Treatment of Tuberculosis. By J. ARTHUR MYERS, Associate Professor of Preventive Medicine, Medical and Graduate Schools, University of Minnesota. London: Baillière, Tindall and Cox. 1927. Pp. xii. + 275. 25s.

Dr. Myers remarks in his preface that "nothing is so mischievous in the campaign against tuberculosis as the notion that only a small group of physicians is competent" to diagnose and treat the disease. He has therefore endeavoured to gather together facts concerning the tubercle bacillus, and the diagnosis, treatment, prognosis, and prevention of tuberculosis, which may be quickly grasped and applied alike by the student and the practitioner of medicine. A study of tuberculosis intended for students should be concise, well illustrated, and so arranged that a reader with little experience to guide him in his selection can readily distinguish between matters of vital and those of only minor import. In these respects, and particularly in the last, Dr. Myers's book is not wholly satisfactory, but the practitioner will read with interest and profit a book which traces the history of tuberculosis from the days of Hippocrates to those of Trudeau, and provides much information of value concerning the pathology, symptomatology, and treatment of the disease. The best chapters are those devoted to the general management of the tuberculous patient and the principles upon which treatment, whether carried out at home or in the sanatorium, should be based. In this country the provision of treatment for the tuberculous has limited the responsibility of the private practitioner who is apt to feel that his duty ends when a patient has been "duly notified" as tuberculous. The patient whose name is on the sanatorium waiting-list is often advised to "get as much fresh air as possible," and may spend his time in walks which entail considerable exertion at a time when every hour of rest would increase his frail chance of recovery. The words of Dr. Hawes, of Boston, which Dr. Myers quotes, are the statement of a truth that is sometimes forgotten: "the patient's stay at the sanatorium is but an incident in a course of treatment, the most important parts of which are before the patient enters and particularly after the patient has left the sanatorium." Dr. David Stewart

has crystallised the modern theory in the statement that "the medicine called exercise must be prescribed in exact doses and marked with a poison label." Most of the instruction given by Dr. Myers is sound, but on occasion he ignores the general needs of the patient. Thus in his zeal for thermometry he forgets the desirability of sound sleep and advises that the patient's temperature should be taken "every two hours throughout the 24 hours" for a period of a few days.

Not all the illustrations in the section on Radiology are convincing. The picture designed to demonstrate the appearance in a radiogram of a tuberculous cavity fails to show one, and a similar criticism applies to a figure referred to as illustrating the cone-shaped shadows described by Dunham. A printer's error has apparently transposed the descriptions of the two pictures of pulmonary exudate in process of absorption. The student is advised that he must "try to differentiate between true intrapulmonary cavities and pleural shadows which may be localised pneumothraces or localised pleurisies," but the author omits to explain how this differentiation is to be made. Two chapters are devoted to brief descriptions of modern surgical methods, including artificial pneumothorax, phrenicotomy, and thoracoplasty, and a chapter on heliotherapy gives a short account of this method of treatment. The statement that "splendid" results are obtained by the use of X rays in the treatment of lupus should not pass unchallenged. Malignant disease has not seldom resulted from the application of the rays to this condition.

THE BASIS OF SENSATION.

By E. D. ADRIAN, M.D., F.R.S., Fellow of Trinity College, Cambridge. London: Christophers. 1928. Pp. 122. 7*s.* 6*d.*

THE work described in this interesting little volume is purely physiological, although an application of the results obtained to problems of mind is by their very nature invited. Here Dr. Adrian hesitates to tread, content for the moment to consolidate the gains acquired by physiological technique.

It has long been known that for practical purposes the impulses set up in motor nerves (isolated for experimentation) by electric stimuli represent the essential activity of such nerve-fibres in the living body. These impulses are momentary disturbances passing along the fibre to the accompaniment of changes in electric potential; owing to the interposition of a phase or period of a refractory character the impulses are discrete, even if extremely rapid, and a continuous transmission of the state of excitation is impossible. The question for consideration set himself by Dr. Adrian was whether sensory fibres would be found to behave differently—work done along this line has hitherto been comparatively scanty and to some extent inconclusive. By means of an ingenious use of the capillary electrometer and a new amplifier (based on technical improvement of those in use for wireless purposes) he has been able to study the action currents excited in sensory nerves; equally ingenious is his method for demonstrating these in a single sensory fibre. He utilised a strip of the sterno-cutaneous muscle of the frog, eventually obtaining a preparation in which only one muscle-sense end-organ (muscle spindle) was present. From this delicate little piece of tissue he was able to prove that on stimulation the muscle receptor (sensory end-organ) discharges a regular discrete series of impulses when stimulated, and that such differences as exist between the activity of sensory end-organ and of sensory fibre, registered electrically, are quantitative and not qualitative. The impulses in sensory fibres are of precisely the same type as those already familiar in motor fibres—a conclusion which is clearly of high significance. The author's next research was to compare the sensory discharges from various types of receptor, and for this he tested pressure end-organs in one of the toe-pads of the cat, touch organs in the same, movement of a hair in the cat's ear, pain organs in its foot, and, further, visual receptors in the eye of the eel. From the standpoint of electrical result the fundamentally important conclusion is reached, that there is no specific activity in sensory nerves corresponding to each type of sense organ; the nervous impulse is common to all, and to the motor nerve-fibre.

Since then, sensations differ while sense impulses do not, differentiation is a central and not a peripheral phenomenon. The significance of the fact that identical discharges are found in the optic nerve can be expressed in a word; connecting fibres within the central nervous system communicate by impulse-discharges of the same type as those in the peripheral fibres. As Dr. Adrian quietly remarks, "there is nothing very startling in this conclusion, but it is satisfactory to have reached it." As for the relation of sensory nerve impulse to central sensation, of physical current to change in consciousness, here at once we find ourselves in deep water again. Dr. Adrian shows, with precision, that the intensity of sensation at any moment is directly proportional to the frequency of impulses in sensory nerve-fibre, but the underlying relationship remains undetermined. With scientific modesty and suspension of judgment, he declares that the gap between stimulus and sensation is not yet bridged—it is only a little narrower than it was before.

VAGOTONIES, SYMPATHICOTONIES, NEUROTONIES.

Second edition, entirely recast. By A. C. GUILLAUME. Paris: Masson et Cie. 1928. Pp. 562. Fr.40.

THE first edition of this work was reviewed in our columns appreciatively some considerable time ago; this second edition is more than twice as long (562 pages instead of 250). Doubtless such an extension represents a real accretion to knowledge of the sympathetic system, in health and disease, but it is curious how much of this is still characterised by assumption and speculation, by probabilities and not by certainties. Dr. Guillaume recounts at great length the clinical aspects of vago-sympathetic disequilibrium, and inserts new chapters dealing with its interrelation with blood conditions, and on the psychical phenomena accompanying this disorder of balance, inclusive of the neuroses. The book is replete with information of the most diverse kinds, and its bibliographical references leave nothing to be desired. Closely printed, and at the same time readable, it reveals its author's erudition and clinical flair on almost every page. Suggestive as are many of his conclusions, we still are conscious of the impression that pathological confirmation of these has been in various instances outrun, and that the fundamental basis of advance in exact knowledge requires much more attention than has hitherto been assigned it.

TECHNIQUE OF SWEDISH MEDICAL GYMNASTICS.

By Dr. J. ARVEDSON, Director of Arvedson's Gymnastic Institute, Stockholm. Translated by MINA L. DOBBIE, M.D., B.Ch., Medical Officer, Chelsea College of Physical Education. London: J. and A. Churchill. 1927. Pp. 259. 12*s.* 6*d.*

THOSE interested in physical treatment will welcome this little book. It is essentially a reproduction of the chapter by Dr. Arvedson, which appeared in "Kleen's Massage and Medical Gymnastics," first published in this country ten years ago; such additions as have been made are all to the good, and the volume provides an authoritative account of Swedish remedial gymnastics. There are certain criticisms which will occur at once to the English reader. Sherrington's work on the action of muscles is not, we think, given adequate prominence. Space devoted to the performance of various exercises in which the attention of two gymnasts is required might have been spared for more theoretical instructions; for, in this country, at least, exercises of this type are a luxury not easily attained, and many

of those given are of doubtful utility. Furthermore, the student in training will have to supplement this book by others, various important exercises being omitted; for example, Klapp's crawling exercises merely receive mention as a desirable form of exercise in the treatment of scoliosis, no details being given. But the profuse illustrations are clear and well produced, and the index is well compiled. The addition of a list of recognised abbreviations would add to the value of future editions. Dr. Dobbie has provided an excellent translation, for which students will be grateful.

THE HISTOLOGY OF SKIN DISEASES.

Histobiologie der Plant. By JOSEPH KYRLE, Prof. Dermat., Univ. Vienna. Vienna and Berlin: Julius Springer. 1927. With 176 illustrations, mostly coloured, in the text. Pp. 287. Unbound, R.M.42.

THE author of this admirable work, the first volume of which we reviewed two years ago, died after a long illness, in May, 1926. He was regarded as one of the most promising of the younger school of dermatologists in Vienna, and was the author of many original monographs. It is generally deplored that he did not live to complete the third volume of the series of lectures which would have dealt with the histology of cutaneous tumours. This collection was edited by his colleague, Dr. von Planner, and has earned the commendation, in a short preface, of the severely critical chief of the clinic, Prof. E. Finger. Each volume contains 35 lectures, and in this group we are introduced to the inflammatory groups of dermatoses, acute and chronic, which include syphilis, tuberculosis in its many forms, Delhi sore, leprosy, lymphogranuloma, and mycosis fungoides. The colloquial style of presentation, reinforced by the superb coloured drawings of actual microscopic slides, will be appreciated by dermatologists and pathologists the world over. Theoretical explanations of the complex processes that underlie the morbid histology of individual diseases are not lacking. Discussions of such subjects as the effect of a virus on nerve-endings, or on the capillary reaction and permeability, show how fundamental and far reaching are the biochemical problems yet to be solved in dermatology. Of particular interest and importance are the paragraphs on the herpetic groups, and on the so-called "dermotrophic" viruses, and on the latest theories of sensitisation, which last section forms a prelude to the introduction of a dissertation on eczema. The differences between simple and chronic inflammatory reactions are well brought out in the lectures on tuberculous and "meta-tuberculous" affections, in which latter group are included lupus erythematosus and granuloma annulare. In the succeeding chapter, the meaning of such phenomena as "allergy" and "anergy" are discussed, and also the function of the skin as an immunising organ. The general arrangement of these lectures follow the classical lines of the Hebra school; there is a good index, and the reference to the literature proves most painstaking reading and memorisation.

Under the title "Die Blutgefässe der Menschlichen Haut und Ihr verhalten Gegen Reize" a German translation has been published of Sir Thomas Lewis's book on "The Blood Vessels of the Human Skin and Their Responses," reviewed in THE LANCET of May 19th. The authorised translator is Dr. Erich Schilf, extraordinary professor in the Physiological Institute of the University of Berlin. The publishers are S. Karger, Berlin, and the price is 24 marks for a bound copy.

Crawford W. Long and the Discovery of Ether Anæsthesia.—This book, by Frances Long Taylor, which was the subject of annotation in THE LANCET of March 17th (p. 566), is now issued in this country by Humphrey Milford, Oxford University Press, at the price of 18s.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE.—The first article in the April issue, although short, is important. In it E. L. Collis and J. C. Gilchrist deal with the effects of dust upon coal-trimmers. They show that these workers suffer rather less than most men from tuberculosis, but distinctly more from bronchitis and pneumonia. Radiographs exhibit signs similar to those widely regarded as characteristic of silicotic fibrosis. The authors point out that the "snow-storm" variety of shadows in radiographs can only be regarded as diagnostic of silicosis when found among workers exposed to a silica risk; they may and do occur among workers exposed to other dusts which do not predispose to tuberculosis. The point is important, especially as compensation for silicosis may shortly be granted to coal-miners exposed to a silica hazard in driving hard headings. The other two articles which make up the number are reports from the Engineering Committee of the American Conference on Electric Shock. The first deals with statistics of fatalities due to electric shock in the United States and Canada, in England, and in Switzerland. The figures show a much lower incidence in England and Wales than in the other two countries, while the rate for the United States is above that for Switzerland. Electricity is more used in the other countries than in England, but not to an extent sufficient to account for the much higher rates. The second article analyses 265 electrical accident cases dealt with at electric supply plants in America with regard to the Schäfer method of resuscitation. This subject is referred to on p. 1130 of our present issue.

May, 1928: Poisoning by arseniuretted hydrogen, arising when pickling metal sheets, and due to accidental presence of arsenic in the acid used or in the metal, is well discussed by C. W. Muehlberger, A. S. Loevenhart, and T. S. O'Malley. The paper is chiefly of value on account of a complete bibliography of cases of arsine poisoning. The second contribution is by A. R. Riddell and H. E. Rothwell, who deal with certain aspects of silicosis as seen in Ontario. Of especial interest is a table giving the silica content of 19 different lungs; it varied from 39·8 per cent. of silica in the ash of dried lung from a driller of silica stone to 0·6 per cent. in the case of an ordinary city dweller. Excellent plates illustrate radiographs of the chest, and the macro- and micro-scopical appearance in three of these cases of definite silicosis.

Reports and Analytical Records.

GOLD LEAF BRANDY (No. 1).

(J. DENIS HENRY MOUNIÉ AND CO., COGNAC.)

ON analysis this brandy, which is stated to be 20 years old, gave the following results:—

Alcohol, by volume	16·12	per cent.
Proof spirit	80·75	,,
Alcohol under proof	19·25	,,
Extractives containing sugar	0·93	,,

Secondary products expressed as parts per 100,000 of absolute alcohol:—

Acidity (acetic acid)	26
Aldehydes	22
Furfural	2·5
Esters as ethyl acetate	108·5
Higher alcohols	200·0

These results support the claim that the brandy is a pure product of the grape. It has not been blended with neutral spirit. The aroma is good and the palate agreeable. The brandy is a suitable and economical one for medicinal purposes, and when recommending its use, it should be borne in mind that it is stronger than many other brands, the customary strength in this country being 40 per cent. of alcohol, which is equivalent to 70 per cent. of proof spirit.

THE LANCET.

LONDON: SATURDAY, JUNE 2, 1928.

THE TREATMENT OF CRIME.

On May 21st the House of Commons went into Committee of Supply on a vote of £473,969 for the expenses of prisons in England and Wales. The date is significant, for on May 21st, 1780, one was born who was to give her life to making our prisons what they are in process of becoming—centres for the reformation of the criminal, hospitals for the cure of crime. When Elizabeth Fry paid her first visit to the female ward at Newgate in 1813 she found it "a den of wild beasts; women, cursing, fighting, dancing, screaming over their games of cards; all idle; all contaminated for ever by the foul smell of the dungeon." Prisons in those days were "verminous dens where staring wretches lay in irons on filthy pallets of straw," and though in our own time these institutions have their defects, the revolution in their management already seems astounding. No less an observer than Prebendary Carlisle, of the Church Army, writing to the *Times* a year ago, maintains that "with their training schemes, their concerts, their sermons, their games, the prisons have in 30 years reduced their daily populations from over 30,000 to less than 11,000, and the prisons from 66 to 33." The very word "cell" has been abolished, and solitary confinement has disappeared in the most advanced of our institutions; "warders" and "prisoners" are now "officers" and "men"; pictures, flowers, and curtains adorn the forbidding interiors; and in each the most treasured of all possessions, a library, with scores of books and papers, is installed. In the course of the debate, Sir Vernon Henderson, Under Secretary to the Home Office, was able to reply, in answer to questions, that every effort was made to improve the accommodation at prisons, and their recreation and workshop facilities; that every step was taken to see that where clothing was handed over from one man to another it was thoroughly and properly disinfected, and that in no case was it in a condition where it could convey any disease to anybody; that there was no reasonable ground for complaint on the score of prison diet which had been very considerably improved, particularly in variety; and that the problem of alcoholism was largely non-existent so far as the prison population was concerned.

To those familiar with prison administration these remarks may seem a commonplace; to others they will be reassuring. But certain other statements in the Under Secretary's reply require serious consideration. Sir Vernon said that arrangements are now being made by which persons regarded by the prison medical officer as possibly mental defectives are transferred to a prison especially adapted for their needs, or where special treatment is given, as at the prison at Birmingham. This seems to suggest that certain prisons are being set apart for the training of mental defectives—a suggestion which we must comment upon. The tendency to-day is to group prisoners together in large establishments; thus Holloway is the women's prison for no less than 17 counties. Similarly, we understand that prisoners exhibiting mental symptoms are sent for observation to certain prisons where special facilities exist. Parkhurst is one of these, Birmingham another. Here ascertained mental defectives should be certified, and transferred to the care of the Board of Control in Lunacy. Under the principal Mental Deficiency Act (1913) many of these mental defectives could not be certified; the Act of 1927, however, removed those difficulties, and it became the duty of the Prison Commissioners to see that they were no longer kept in prison. There are, however, certain prisoners who can neither be certified as insane nor dealt with as statutory mental defectives, yet are incapable of being treated as ordinary prisoners because they are (so to say) non compotes mentis. Of such persons, 77, according to the latest returns, are recorded as being in prison, where they receive special treatment in a separate institution. It is these prisoners to whom Sir Vernon Henderson referred as "mental defectives." Mental defectives undoubtedly they are, but they ought not to be thus confused with those to whom alone this specific statutory term applies—namely, those who are certifiable under the Mental Deficiency Acts. While there is reason to hope that certification of prisoners under this Act is satisfactorily carried out, it must be remembered that the conditions which make it necessary are far from ideal; as Mr. Rhys Davies pointed out in the debate, mental defectives should be detected before being sent to prison rather than after. He recalled the recommendation of the Departmental Committee on the Treatment of Young Offenders, that observation centres or central remand homes should be provided by the State in convenient places for the examination and observation of all young offenders. He had seen something of such work in Belgium, and was satisfied that nothing was more hopeful in the whole of Europe. He referred, of course, to the observation centre for lads at Moll, and the similar centre for girls at Namur, which are idealised remand homes where children between 7 and 21 years of age are sent for special study and classification. Under free and natural conditions each child is encouraged to reveal himself, and his particular tastes, abilities, and proclivities are ascertained. After careful individual study the treatment is prescribed—home, foster parents, State school or special institution. The beginnings of a similar system exist in England. At the Boys' Prison at Wandsworth are collected all the lads remanded from the London area, and all those who have been committed to Borstal institutions. Mr. Rhys Davies drew attention to the good work that was being done at this centre, where the careful medical and psychological examination of each child is supplemented by inquiries into his home circumstances by a group of voluntary women workers. Here again, as the result of these studies, some of the boys are placed on probation, others certified as mentally defective, and others sent for training to Borstal institutions at Portland, at Feltham, or near Rochester, according to their needs, for each of these institutions is specialised for different groups of delinquents.

All these institutions, both here and in Belgium, deal with the young offender as such, what time

the prisons zealously endeavour to reform the adult criminal. But the future is with the prevention of delinquency rather than with the treatment of crime, the causes of which are often to be found at a very early stage in the life of the individual. The mental health of all children, therefore, should become the intelligent care of each community; all character deviations and mental abnormalities should be early detected and early corrected to avoid the waste of good citizens and the tremendous expense of criminal repair that is our present portion. In that prophylaxis lies the hope—indeed, the purpose—of the mental hygiene and child guidance movements.

ASPHYXIA.

THERE are three principal causes of acute asphyxia: drowning, electric shock, and the inhalation of poisonous gas or vapour. The increasing ease with which town populations can reach bathing-places makes the tale of drowning accidents longer every summer; the second risk is increasing with the growing industrial and domestic use of electricity, and the third has become much greater since motor vehicles came into popular use. It is, therefore, becoming more and more necessary for the practitioner to be certain in his mind of the methods he will employ when confronted with asphyxia. Artificial respiration immediately occurs to the mind of doctor and first-aid worker alike, and the Schäfer prone-pressure method [1] has proved so successful of recent years that it has almost superseded all others. The patient's air-passages are cleared as well as possible, and he is laid prone on the floor with one arm bent and the other extended, and the face turned to the side. The operator kneels astride the thighs and places his hands on the lower ribs. He compresses the thorax by leaning forward on his straight arms, and releases the pressure by swinging back. Inspiration and expiration should last about two seconds each. So much every first-aid worker knows, but while artificial respiration is undoubtedly the corner-stone of treatment for asphyxia the doctor is properly expected to offer more skilled help than the layman, and there are other very important facts to be remembered.

Drowning, to quote a recent and able summary of the position by Dr. C. K. DRINKER,[2] is, as far as is known, a relatively simple form of asphyxia, and when the mouth and nose have been cleared of obstruction the Schäfer method is all that remains to be done. Nerve cells die at different rates when deprived of a regular supply of oxygenated blood. The small pyramidal cells of the cerebrum die, he says, in eight minutes, while the spinal cord and sympathetic ganglia may last for an hour. Complete immersion in a healthy person does not cut off the oxygen supply completely, and the chances of recovery depend on the great viability of the medullary centres. It is necessary, of course, to lose no time before starting rescue measures, but a healthy individual has a good chance if artificial respiration is commenced, even after 15 minutes. Dr. DRINKER does not recommend drugs for drowning, or indeed for any form of asphyxia. Alpha-lobelin he stigmatises as inefficacious and dangerous. Caffeine sodiobenzoate may have some effect if given intravenously, and can do no harm, but the doctor may safely leave his hypodermic case at home. When electric shock is the cause of the asphyxia, perseverance is the keynote of treatment. It cannot be too widely known that death from electricity is usually no more than apparent death. Artificial respiration should be begun immediately and continued for several hours, for no form of asphyxia yields such a good recovery-rate. Lay workers are instructed to continue their efforts for four hours; recovery is common after three hours and has even occurred after eight. Electricity may act primarily on the circulation, so that respiration continues for a few minutes after the shock and then ceases; in such patients the heart is probably in fibrillation and the prognosis is bad. Generally, however, the current paralyses the respiratory centre while leaving the circulation normal, and the patient may recover his breath after hours of apnœa. All the evidence warns us against declaring patients dead unless heart sounds and pulse are entirely absent after a long period of prone pressure respiration; they turn cyanotic and regain colour as treatment proceeds. To combat the rise of intrathecal pressure which sometimes occurs, Prof. S. JELLINEK recommends lumbar puncture.[3]

Asphyxia caused by carbon monoxide poisoning introduces an entirely different factor, as Prof. HAMILTON HARTRIDGE pointed out in a lecture reported on p. 1137 of our present issue. The asphyxia resulting from inhalation of coal-gas, motor-car fumes, or the effluent from badly ventilated gas and anthracite stoves, is chiefly due to the affinity of the monoxide for hæmoglobin, so that oxygen is excluded from the blood. This chemical effect calls for oxygen inhalation to assist the starved tissues. As the respiration is depressed in the late stages, 5 per cent. of carbon dioxide should be added to stimulate the respiratory centre. Prof. HARTRIDGE also suggested the exhibition of sodium cyanide for this purpose. Artificial respiration should, if possible, be performed with the oxygen-carbon dioxide mask in place,[4] and it is important that the oxygen be administered as early as possible, for the damage done by oxygen-want is, as we have said, directly proportional to time, and it is possible that a patient may recover from the asphyxia and yet be permanently crippled in cerebral function. It should, however, be remembered that high concentrations of oxygen are dangerous to the lungs if given continuously for long periods, and the oxygen should be replaced by air and carbon dioxide as soon as the real urgency has passed. All carbon monoxide should have left the blood after an hour and a half. Another useful way of supplying oxygen to the tissues is by transfusion, but this must be done early. Finally, a valuable hint, that does not always occur either to doctor or layman, is that the nearest gas-works will probably provide trained help and suitable inhalation apparatus more efficiently and promptly than any hospital.

[1] Harvey Lectures, 1907–1908. J. B. Lippincott Company.
[2] Jour. Amer. Med. Assoc., 1928, xc., 1263.

THE EVOLUTION OF A HERESY.

THE heresy of one generation becomes the orthodoxy of the next. Prof. ERNST KRETSCHMER, known in this country by the translation of his work on "Physique and Character," contributes an important article to the *Deutsche Medizinische Wochenschrift* of April 13th on Further Developments of Psychotherapeutic Technique, especially of Psycho-analysis. He begins by noting that whoever, as a bystander, might seek to form a judgment from the theoretical

[3] Wien. Klin. Woch. 1928, May 3rd, p. 622.
[4] Booklet of American Gas Association, Lexington-avenue, New York.

discussion for and against psycho-analysis that has been carried on in past years would find himself in hopeless confusion. On the one side he would see an organisation that resembled not only a scientific alliance but a religious sect, inasmuch as it expelled dissenters who in turn built up hostile daughter sects; on the other side he would see a small group of critics who, seizing upon its weaknesses and errors, too hastily reached a caustic repudiation of the whole psycho-analytic movement. This condition of affairs was, says KRETSCHMER, the reflex of the storm that productive new thoughts are wont to raise at their first appearance; but it is now becoming a thing of the past, for the younger generation of psychiatrists knows nothing of the artificial antithesis between analyst and non-analyst. As a contrast to the old theoretical discussions he points to the work of independent investigators like von BLEULER, HOFFMANN, HOMBURGER, KRONFELD, and J. H. SCHULTZ, who, starting with no blind acceptance of the views of FREUD and his school, have subjected the psycho-analytical thesis to purely empirical clinical tests with resulting judgments that trend clearly and uniformly in one direction. Whilst exercising definite criticisms of some weighty points, these authorities see in the nucleus of the Freudian method one of the most valuable foundation-stones of a modern psychotherapy, and in its fundamental results—besides untenable or too paradoxical formulations—a wealth of psychological insight as well as empirically sound knowledge of mankind. The personal experiences of KRETSCHMER and his colleagues lead to the same generalisations and are likewise productive of criticisms that arise from actual observations and bear no taint of prejudice or a priori reasoning. His own methods are eclectic and he disapproves of those who analyse "according to Freud" or "according to Adler," for he believes that whoever has at heart the good of psychotherapy and psychiatry will set forth what is valuable in the teachings of the different analytical schools, and that the important fraction of psychotherapists who still group themselves into sects must incorporate their work with the general body of medical psychology. KRETSCHMER here pictures a process of evolution that is taking place, though more slowly, among ourselves in this country. Here, as elsewhere, there has been a separation of psycho-analysis from the general body of medicine and even of psychiatry, and the separation seems to have been accepted by analysts as well as by their opponents. Although psycho-analytical conceptions, after more than thirty years of strenuous opposition, are increasingly finding acceptance outside the circle of whole-hearted Freudian adherents, and although the day of futile theoretical discussion has almost passed, yet these conceptions, it must be admitted, are not yet handled with that freedom that should characterise scientific work and without which adequate clinical discussion is impossible. If let alone this state of things would eventually right itself, but KRETSCHMER's work indicates the need for a change in the present point of view that acquiesces in the isolation of psycho-analysis. The scope and limitations of analysis, its successes and failures, the applicability of particular methods, the use of psycho-analytical knowledge apart from actual analysis—all these and many other problems will sooner or later force themselves upon medicine and will only find solution in frank and unhampered discussion; and in the interests of psycho-analysis itself there is urgent need of that informed criticism which is the breath of life to any developing theory.

Annotations.

"Ne quid nimis."

DISABILITY DUE TO RESPIRATORY DISEASES.

OUR knowledge of the incidence of most forms of disease has for its basis statistics of mortality. Statistics of morbidity, except in the case of infectious diseases, are extremely meagre, and for many non-lethal illnesses non-existent. From the public health standpoint, but much more from the economic and industrial point of view, mortality figures may leave quite erroneous impressions as to the relative importance of various causes of invalidity and of the hygienic problems requiring most urgent attention. The "captains of the men of death" are not necessarily in the commissioned ranks of the factors which at present preclude the attainment of the highest possible level of human health, efficiency, and happiness.

In a recent issue of THE LANCET,[1] the importance of respiratory diseases, in particular bronchitis and pneumonia, as causes of mortality, and the influence and difficulties encountered in the accurate evaluation of various ætiological factors have been clearly emphasised by Miss Hilda M. Woods. The position occupied by affections of the respiratory tract among the causes of morbidity and the relative frequency of different kinds of respiratory disease causing disability form the subject of an important paper recently published in the Public Health Reports of the United States Public Health Service by D. K. Brundage.[2] The paper deals with the statistics of invalidity caused by respiratory diseases among employees of the Edison Electric Illuminating Co. of Boston, and also those collected by a group of industrial sick benefit associations. The records from the former source include all disabilities lasting one working day or longer, and are therefore of prime importance in giving us a true insight into the frequency of minor illness; the latter include only those cases of illness causing disability for eight consecutive days or longer. It was found in this investigation that, roughly, half of the total number of absentees and half of the total time lost by employees were due to respiratory illnesses. The common cold, which accounts for 71 per cent. of the total diseases of the respiratory system, is by far the worst offender, being six times as common as tonsillar and pharyngeal affections, eight times as frequent as influenza, and more than 20 times as frequent as bronchitis. In spite of the shorter average duration of invalidity resulting from colds, the great excess of cases of this condition puts it an easy first in the causation of the total number of days lost in industrial employment. Practically all cases of colds are of less than eight days' duration, as is seen when the records of sick benefit associations, which exclude illnesses of less than eight days' duration, are examined. In this collection of data common colds entirely drop out of the morbidity picture. The difference between the total annual absence rate of 564 per 1000 men, and the absence rate of 43 per 1000 due to illness lasting eight consecutive days or longer shows how vast a proportion of all respiratory diseases last for a week or less. The seasonal variations in mortality from affections of the respiratory tract are almost parallel to those of morbidity, in which the minimum occurs in July and a maximum in February. A point of some interest is revealed by a comparison of the seasonal curves of all respiratory illnesses irrespective of duration and of those lasting for eight days or more. From this it would appear that attacks of respiratory sickness having their onset in late winter and early spring tend to be more prolonged than those which

[1] Woods, H. M.: THE LANCET, March 17th, p. 539.
[2] Brundage, D. K.: Public Health Reports, U.S. Health Service; March 16th.

begin in the early part of winter. This observation may be taken to represent a lower degree of resistance to respiratory infections among industrial workers towards the end than at the beginning of winter. The seasonal variations in the incidence of common colds and influenza are much greater than in either diseases of the pharynx and tonsils or bronchitis and pneumonia. As in the mortality statistics presented by Miss Woods, so also in these morbidity statistics, one of the striking features of respiratory diseases is the great geographical divergence in the rates of incidence. These wide differences both in frequency and severity demand adequate explanation before successful prevention or control can be expected. These statistics show very clearly how relatively infrequent are the fatal forms of respiratory disease, and that the apparently trivial disability, the common cold, not in itself dangerous to life, is yet the disease probably most inimicable to national prosperity.

SEPTIC INFECTION IN A MATERNITY HOSPITAL.

AN unusually conclusive and satisfactory investigation into the causation of a curious epidemic occurring in a maternity hospital is recorded by Dr. R. Marshall Allan, Director of Obstetrical Research, University of Melbourne, and Dr. Lucy M. Bryce.[1] In July of last year Dr. Allan was requested by the medical officer of health of a Melbourne municipality to look into the circumstances surrounding the deaths of a mother and two infants and a serious infection of a third infant, all of whom had been inmates of a private maternity hospital of high standing. Six practitioners had brought the matter before the municipal authority, and the matron of the hospital had agreed to refuse admission to patients until the investigation was completed. The maternal death had occurred two months after delivery which took place on April 9th, 1927, in a woman whose early puerperium was normal. She was allowed up, in the private hospital, on the twelfth day after delivery and on the fourteenth developed a temperature of 103° F. and a pulse-rate of 100. Four days later (April 27th) the temperature was 105° F. and the pulse-rate 120, and the patient was sent away to the Women's Hospital acutely ill and semi-delirious, with abdominal pain, but no tenderness or rigidity. Hæmolytic streptococci were isolated from the blood, and in spite of injection of mercurochrome and a blood transfusion death supervened on June 4th, 1927. Post mortem, the uterus was found to be small, the appendages apparently normal, and no sign of thrombo-phlebitis in the pelvis could be detected.

The room occupied by this patient when at the private maternity hospital was disinfected and the mattress destroyed; no other patient was admitted to it until five weeks after her removal, after which it was occupied by two mothers recently delivered, and their infants. One of the infants (G.), though discharged apparently well 12 days after birth, developed a swelling of the vulva associated with inguinal adenitis; over 40 abscesses formed in various parts of its body, but eventually it recovered. Another infant (N.), born a week later than G. and nursed in the same room, developed a swelling of the right ankle and cellulitis of the thigh, and subsequently died. A third infant (M.), born three weeks after N. and housed in a different room, died five weeks after birth from septic infection. On bacteriological examination of the blood cultures taken from the woman patient, a hæmolytic streptococcus was found, and an organism showing similar and rather unusual characteristics was recovered and isolated in pure culture from one of the abscesses occurring in infant G. Material from the other infants was not available, but a report was received that examination of the pus from one of them (N.) revealed streptococcal infection. The next step in the investigation was a search for a carrier of virulent streptococci among the five doctors and four nurses who were considered to be possible sources of infection. From the naso-pharynx of one of the nurses an organism was obtained which was identical in cultural and morphological characteristics with the strain of streptococcus isolated from the patients. Descriptions in tabular form of fermentation tests and of mouse inoculations are given; there seems to be no doubt that the organism was highly pathogenic. The nurse, on further examination, was found to have pus in the left maxillary antrum, which was evacuated, and the organism was recovered also from this material. She was suspended from duty pending further examination and treatment.

Most interesting questions arise in connexion with this epidemic. Inspection of the hospital and the methods in use revealed no defects in management or aseptic technique. The previous case records were entirely satisfactory. The nurse had been in constant contact with obstetric patients and babies in the same hospital for four months, but no septic infections occurred prior to those under investigation. The possibility that patient and nurse were infected from a common source is regarded as unlikely since there was no history of acute onset or of symptoms in the relevant period. As to the mode of infection of the woman patient, this remains obscure. The omission to which the authors themselves draw attention, to take intra-uterine or cervical cultures from this patient, is regrettable on this account. The lateness of the onset of the septicæmia in the case points to a puerperal rather than an intrapartum infection. Even more puzzling than the channel whereby the organism gained entrance to the body is the escape of other women who were in the charge of the same nurse from either intrapartum or puerperal infection. The nature and mechanism of defence against infection during and after parturition is a subject on which our knowledge is still very limited, and anomalies such as are revealed in this careful study are likely to carry us further than investigations confined to local pathological conditions of the breast or uterus.

[1] Medical Journal of Australia, March 31st, p. 390.

READING AND SPELLING.

THE condition known as word-blindness, a more or less complete inability to learn to read and to spell, comes occasionally under the notice of practitioners, particularly those engaged in school services. The original idea that it was a form of feeble-mindedness was soon abandoned in favour of Hinshelwood's suggestion that it was due to a congenital defect of development of a small area in the temporal lobe of the cerebrum—a theory which has become generally accepted in medical circles. Dr. Samuel T. Orton,[1] of Ohio, who has made many studies of speech defects, throws out a new theory. The weakness of the accepted view, he holds, lies in the fact that no necropsy reports are yet available, and that the parallelism of symptoms found in cases of congenital word-blindness and in those of acquired word-blindness does not necessarily prove similarity of lesions, since destructive lesions of the speech zone do not prevent acquisition of speech, other areas being apparently allotted to the purpose. He made a special survey of 15 cases whose backwardness in reading was very marked, as compared with their progress in other subjects and their general intelligence. Their intelligence quotients, measured on the Stanford scale, ranged from 71 to 122 in spite of the special difficulty with certain tests caused by the reading disability. They all had normal vision and could easily call up visual memories of objects and pictures. The failure was in the associative linkage between words visually presented and the corresponding concept. Now it has been found that, at the associative level of the cerebrum, destruction of one hemisphere may cause loss of the associative function and inability to read (acquired word-blindness), while

[1] Jour. Amer. Med. Assoc., 1928, xc., 1095.

destruction of the other hemisphere does not produce this result. Visual records of only one side are used in symbolic association. Yet the inactive side is as well developed as the other, and must have been "irradiated equally with the active." This would leave some record in the cells of the inactive side, an engram which would be opposite in sign and would form a mirrored pattern. May it not be, then, Dr. Orton asks, that while normally only one of these paired engrams is in activity, in these abnormal cases under consideration the habit of suppression of the other engram has not been established and hence the difficulty in differentiating between "p" and "q," and "d" and "b," "was" and "saw," and the tendencies to mirror-reading and mirror-writing which he found in his cases to be characteristic of the condition? The theory is fascinating, but not quite convincing, apart from the difficulty of proving it, which is as great as in the case of the theory it is proposed to supplant. The possibility of its truth depends upon the correctness or otherwise of Dr. Orton's claim that the "tendency to reversal in the direction of reading" is the cardinal factor of the condition. The confusion of letters like "p" and "q" is one which probably few children escape at an early stage, and mirror-writing has been a well recognised curiosity of development, usually of short duration, in many normal children, and of longer duration in some feeble-minded children. These facts may seem to support Dr. Orton's theory that the condition which he names strephosymbolia is a physiological variant, but mirror-writing does not appear to have been a factor in some recorded cases of word-blindness. He admits that only one of his 15 cases "fits the measure" of Hinshelwood's congenital word-blindness, and his estimate that 2 per cent. of school-children are affected with strephosymbolia confirms the suspicion that he includes cases that do not even approximate to word-blindness, which has in England been estimated to occur in 1 out of 2000 children. The mirror-engram theory also fails to explain the difficulty with other letters and words, a difficulty which Dr. Orton somewhat cursorily sets aside as of slight importance. Certain new training methods based upon the theory are being carried out upon some of the children; the results of these, when they are available, should be of much interest.

PSYCHOLOGY OF ANÆSTHESIA.

IN a lecture recently delivered at the Royal Dental Hospital [1] Dr. Dudley Buxton discussed the psychological aspects of anæsthesia, a matter as obscure and little studied as it is practically important. If the essential causes of difficulties and dangers that arise both in early and in late stages of narcosis were better understood it would probably be found that the root of the trouble is often psychological and not physical. Every anæsthetist is familiar with some of the phenomena that may arise through what is spoken of as the "mental" or "psychological" disposition of his patient. The anæsthetist knows that an abnormal reflex activity even during deep narcosis, or an extraordinary amount and degree of excitement in the light stages, may characterise the unconscious state of the "temperamental" patient. In other subjects of the same kind narcosis may leave a peculiar and abiding effect, so that for weeks or months after its induction the patient's ordinary sleep is attended by vivid and distressing dreams which were first originated by the inhalation of an anæsthetic. Dr. Buxton alludes to the well-known instances in which shock, even fatal shock, has occurred at the beginning of an administration, even before any anæsthetic at all had been inhaled by the apprehensive subject. It is very plain, therefore, that what is called the "psychological" side of anæsthesia has a direct and powerful influence on the effects of anæsthetic administration, and this influence is possibly even more determinant when a local analgesic is employed than when there is unconsciousness. It is, however, the play of the "psychological" factor during unconsciousness that is so interesting, so dominating, and, further, so hard to investigate. Animal experimentation is here likely to be of little guidance as to human behaviour, for we are dealing with that very part of the organism in which the higher is most differentiated from the lower animal. Subjective evidence, too, is only partially reliable, for the memory of what has taken place when the brain was still under narcotic influence is necessarily imperfect.

[1] British Dental Journal, 1928: XLIX. 405.

IS THERE A RACHITOGENIC DIETARY FACTOR?

WE are accustomed to think of rickets as a deficiency disease brought about by a lack of vitamin D or by an insufficiency or unbalance of the calcium and phosphorus in the diet. E. Mellanby (1925,[1] 1926 [2]) believes that there is, in addition, a substance, occurring chiefly in cereals, the presence of which renders the foodstuff containing it actively rickets-producing, and that when the substance has been removed the same diet has no ill-effects. P. M. Holst (1927 [3]) adduces evidence in support of Mellanby's idea. He shows that rats develop rickets when they are fed on an exclusive diet of oats or yellow peas, or wheat or rye, or barley or maize, or polished rice. Pure starch does not produce the effect; rats are able to live on it for some time, and develop only an osteoporosis. An addition of casein and lard makes the animals live longer and grow, and rickets is not produced, but when the casein and lard are added to the diet of pure oats or other pure foodstuffs rickets is not prevented. Holst found that he could extract the rachitogenic substance by boiling oatmeal with a dilute solution of hydrochloric acid; the extract, when filtered and neutralised and given to rats, in a daily dose corresponding to 15–20 g. of oatmeal produced rickets in rats on the pure starch diet. The substance is organic since the ash of oats does not possess the rickets-producing power; it is dialysable and can be precipitated with alcohol, but Holst's results are not entirely in agreement with Mellanby's as to the physical and chemical behaviour of the rachitogenic substance.

Recently A. F. Hess and M. Weinstock (1927 [4]) have made the startling suggestion that cow's milk contains a rachitogenic substance and that the more of the milk an infant receives the more likely it is to develop rickets. Much in their paper is unsupported assertion: they state, for instance, that an infant of six months, receiving a quart of milk, is more likely to develop rickets than one of the same age receiving a pint, but they bring no figures in support of the statement, nor do they dispose of the objection that an infant of six months, receiving only a pint of milk would be under-caloried. Rickets is a disease which requires active growth, in order to show itself in a florid form, and growth is unlikely to be active if the supply of calories is much too low. As to details, Hess and Weinstock start with the premiss that human milk is more preventive of rickets in the human infant than is cow's milk, because they have found that in new York, in March, all bottle-fed infants, unless they have received some special specific therapy, are suffering from some degree of rickets. Only one-half to two-thirds of the breast-fed infants are found to suffer in this way. Hess and Weinstock, therefore, set out to discover whether the difference is due to the superiority of human milk in the antirachitic factor. When they tested the antirachitic value of cow's milk and of human milk on rats, they found that 20–25 c.cm. of the former were needed to prevent rickets, while 25–30 c.cm. of human milk were needed. This result showed that the human milk tested was of very poor antirachitic potency for rats, whereas Hess and Weinstock make

[1] Med. Res. Council Special Report Series No. 93.
[2] Proc. Phys. Soc., Jour. Physiol., 1926, lxi.
[3] Jour. of Hygiene, 1927, xxvi., 437.
[4] Amer. Jour. Dis. Child., 1927, xxxiv., 845

the assertion that breast milk is of high antirachitic potency for infants. They therefore conclude that "the high protective value of human milk in infantile rickets cannot be ascribed to its content of the antirachitic factor." If it were due to abundance of the antirachitic factor, they argue, rickets would have been prevented in rats, in a smaller dosage than that found necessary. When they made experiments on rats with the cream of cow's milk, they got into yet more difficulty. They used 20 per cent. cream and top-third milk, but they did not get as good results with the top milk as with the cream, although the doses of fat given were supposed to be identical. From this slender piece of evidence Hess and Weinstock conclude that there is an actual rachitogenic factor in the skim fraction of the top milk, which offsets the antirachitic value of the cream contained in it, and presumably accounts for the inferiority of cow's milk to human milk for the prevention of rickets in human infants. The animal experiments are very few in number, and if such an important conclusion was to be drawn from them it would have been advisable to supply actual estimates, showing that the same amount of fat was given to both sets of rats.

The conclusions which Hess and Weinstock draw may be correct, but evidence is lacking that their whole premiss, that human milk is so much superior, is not false. They tell us that all the infants on cow's milk and a large proportion of those on breast milk get rickets. Some breast milk is therefore superior to cow's milk as an antirachitic for infants, but some from their own admission, is not. Clinical evidence should certainly have been included to show that the breast milk tested on rats was derived from the mothers of non-rachitic infants, and not from the mothers of rachitic ones, who admittedly existed in the community in large numbers. Hess is too well known a pediatrician for this communication to be disregarded, but the reasoning is difficult to follow, and some of the necessary data have not been published. The evidence offered is certainly not sufficient at present to warrant the inclusion of milk among the substances which contain a positive rachitogenic factor, but evidence seems to be accumulating that cereals do contain such a factor.

NORMAL VARIATIONS IN THE CEREBRO-SPINAL FLUID.

IT must be admitted that the examination of cerebro-spinal fluid is often disappointing. The pathologist feels that he should be able to do more with what has been so hardly won; was not the first clinical sample obtained by laminectomy? The specific changes are rather few, and if we agree that the fluid varies within the limits normally stated, many organic lesions of the central nervous system seem to leave it unaffected by their presence, and therefore of but little use in diagnosis. Greater precision is desirable if possible, and Dr. Axel Neel[1] has therefore done a service in analysing 6000 successive cases in which the C.S.F. was examined. He finds—and most pathologists will agree with him—that the normal maximal number of cells per cubic millimetre is not, as conventionally stated, five, but is in fact not more than one. Moreover, his 800 normal cases never showed a total albumin value (as estimated by the Brandberg-Stolnikow-Bisgaard method) exceeding seven, and it rarely exceeded six. In order to count cells with such accuracy, a chamber of exceptional depth and area is necessary to obviate errors of multiplication. Dr. Neel claims that he was unaware of the clinical diagnosis until after the examination of the fluid; but he was, perhaps, a little fortunate in never coming across those specks of dust, epithelial cells, or even red blood cells, or blood leucocytes from needle trauma which worry other pathologists, and might have ruined his series. He finds the gold-sol test of no differential value; here again most observers will agree with him. Pandy's test, in which C.S.F. is dropped into saturated aqueous phenol, he regards as the most reliable crude test for excess globulin. He rightly insists that much useful information may be lost by failing to do accurate counts and accurate albumin estimations. Particularly is this true in the differential diagnosis between hysteria and organic lesions of the central nervous system. It is remarkable what a large proportion of syphilitic patients without clinical nervous lesions fall just outside normal values both in cell count and albumin content. Of late there has been a tendency among physicians to demand quantitative instead of qualitative estimations of C.S.F., and there is no great difficulty in meeting the demand. There is, however, no Fuchs-Rosenthal counting chamber of adequate dimensions on the English market at present. Dr. Neel's chamber has double the usual volume.

[1] Münch. med. Woch., April 27th.

IMPACTION OF THE WISDOM TOOTH.

THE reason why the third molar tooth is so apt to lead to trouble in the lower jaw is that the mandible is rarely large enough to accommodate this tooth even when it is normally situated, and the lack of room leads frequently to its misplacement. When the eruptive impulse results in impaction against the tooth in front, infection in the bone and soft tissues is likely to ensue, and the position of the tooth favours the spread of such infection along cellular planes backwards, downwards and upwards, into dangerous areas. The lay public is so ready to attribute any pain or swelling of the upper or lower jaw in adult life to a wisdom tooth, however, that practitioners are apt, after glancing into an apparently normal mouth, to search for less obvious sources of pressure or inflammation. In the lower jaw especially, however, attempted eruption of the third lower molar can give rise to most unpleasant results, and superficial inspection without a radiogram is not sufficient to exclude its presence in an abnormal or impacted situation. The dangers of neglect to take a radiogram are exemplified by two cases recently described by E. Polloson and M. Dechaume in the *Presse Médicale*.[1] The first case was that of a girl of 18, who had a large swelling at the angle of the jaw accompanied with much pain. The condition had existed for over a year. There was no history of inflammation and the growth, at first soft, had become progressively harder. A surgeon diagnosed a periosteal sarcoma of the mandible; he operated and removed a large mass of fibrous tisssue which, when examined microscopically, showed no signs of malignancy. The wound healed well, but the swelling soon returned, increased in size and invaded the mouth, leading to trismus. Radium was applied intrabuccally but with no result beyond that of causing ulceration of the mucosa followed by the establishment of a discharging sinus at the base of the coronoid process. The surgeon advised a further operation of a more extensive character, but, fortunately for the patient, at this stage a radiogram was taken. The alveolar plates of the mandible were seen to be expanded and lying between them was a deformed, unerupted third molar. In the maxilla, on the same side, both the second and third molars were misplaced, so that normal eruption was impossible. It was evident that the swelling and trismus were due to infection round these teeth. The patient came under the care of Prof. Tixier, who operated and with much difficulty removed the impacted teeth. The trismus and swelling speedily subsided, though some permanent deformity remained. The second case recorded was equally instructive. A woman of 58 had suffered from excruciating attacks of facial neuralgia on the left side for over 20 years. The slightest draught brought on an attack and the patient spent most of her time in bed in a warm atmosphere. In 1924 the neuralgia became more

[1] A propos des accidents graves liés à l'éruption vicieuses de la Dent de Sagesse, Presse Médicale, April 11th.

localised and seemed to arise from the left side of the mandible. Gradually a swelling manifested itself at the angle of the jaw accompanied by signs of inflammation and leading to a progressive trismus which eventually became complete. The patient was by this time very emaciated and her mouth extremely foul. At this stage, for the first time, a radiogram was taken; it showed a lower third molar lying almost horizontally, a zone of rarefaction round it indicating the existence of a chronic osteitis. Under general anæsthesia Prof. Tixier made an external incision and removed the tooth. Both neuralgia and trismus completely disappeared. These cases illustrate the wide variety of clinical signs which may follow impaction and infection of third molar teeth. In neither was the dental origin of the condition at all obvious, nor could it be easily inferred from the history or the physical signs. If a radiogram had been taken at any early stage the girl could have been spared a mutilating operation and the mental anguish consequent on the belief that she had malignant disease; the woman could have been cured earlier of the neuralgia which had crippled her life for 20 years.

NOTIFICATION OF VENEREAL DISEASE IN NEW SOUTH WALES.

IT is difficult to draw solid conclusions from the recently published report of Dr. Robert Dick, the Commissioner under the Venereal Diseases Act in New South Wales. The report is included in the annual report of the Director-General of Public Health and deals with the year 1926. During that year there were 6001 notifications, an increase of 687 on the number notified in 1925. The increase is attributed to the issue of a circular to medical practitioners at the end of 1925, directing attention to their legal responsibilities and duties under the Act. The Act intentionally placed the duty of notification upon the doctor. Dr. Dick seems to think that his statistics are incomplete for reasons which are familiar in this country. Some medical practitioners think notification inherently futile or at least useless as a precaution; some find it too much trouble; some act as if "the least said the better." The statute provides that notification shall be by number not by name. Even the address of the patient is withheld, but if he fails to continue under treatment until cured, it is provided that his name and address shall be forwarded to the Commissioner for necessary action to ensure resumption of treatment. Here the figures are instructive. During 1926 the Commissioner thus received the names and addresses of 1060 patients who had defaulted from treatment. Of these 280 resumed in response to representations, 187 cases were still under investigation at the end of the year, and the rest (the majority of the total) could not be traced. Of course, as Dr. Dick suggests, many may have been visitors from overseas, from other States, or from country districts, and may be under treatment elsewhere. Still it is hard to resist the conclusion that in Australia, as in this country, patients are prone to give false names and addresses. The proportion between the sexes remained roughly the same in syphilis notification in 1926 as in previous years—namely, about 3 males to 1 female. There was a difference in the proportion in gonorrhœa; for 1923, 1924, and 1925 it had been roughly 10 males to 1 female; in 1926 the ratio was 7·84 males to 1 female. The New South Wales statistics clearly confirm the fact that venereal disease is a problem of large cities. The notification figures are striking on this point. The metropolitan area with a population of little more than 1,000,000 accounts for over 5000 notifications. The rest of the State with a population of scarcely 200,000 more had only 387 notifications. Dr. Dick does not think that venereal disease is spread in Australia by commercialised vice. Professional prostitution does not exist on a large scale, but there is sexual promiscuity in the big cities where people find themselves free from gossip and criticism and where they go to have a good time and spend their money. Perhaps the most disquieting feature in the report is the rise in the number of female children and young girls suffering from gonorrhœa. The total of these in the age-group up to 20 years was 135 in 1924 and 153 in 1925, but in 1926 it rose to 268.

SURGICAL DIATHERMY OF THE TONSILS.

REMARKABLE differences of opinion are to be found in the published literature concerning the use of diathermy for removal of tonsils. On the one hand, G. B. Massey [1] states that "the consensus of opinion of those applying the method skilfully is that these applications should replace tonsillectomy in the great majority of cases," while, on the other hand, Novak [2] considers that "the very severe reaction, the great pain, the toxæmia, and the extreme discomfort of the patient, are sufficient reasons for condemning the method." In a moderate and well-considered review of the subject, Dr. E. W. Frecker [3] comes to the conclusion that this difference of opinion is due, as might well be expected, to difference of technique. He believes that the bad results arise from the use of too heavy a current for too long a period, and from the employment of too large an electrode; and he is of opinion that the reaction cannot be sufficiently limited by the ordinary method of bipolar coagulation, and that a button electrode should never be used in these cases. Dr. Frecker claims that the monopolar method, often termed electro-desiccation, and causing drying of the tissues over a very limited area, is far more suitable for the treatment of tonsils, and describes the technique. As electrode a needle is used, insulated by a rubber-covered glass tube, so that only ¼ in. projects for insertion into the tissues. Applications are made once a week, to each tonsil alternately, about six sittings being required. Anæsthesia is secured by painting the region with a 10 per cent. solution of cocaine, and it is said that the treatment is almost free from pain both at the time of application and afterwards. The needle is inserted for ¼ to ½ in., the current is applied until a white ring appears, and the process is repeated until the whole of the tonsil is white, which entails 12 or 15 punctures, according to the size of the organ. If any bleeding should occur, it is checked by raising the electrode from the surface and allowing the current to spark on to the bleeding spot. The after-treatment is to use a simple mouth-wash; the reaction, says Dr. Frecker, is limited to a little soreness on the next day, and the sloughs come away piecemeal without trouble; the result is an undistorted fossa, without sign of fibrous tissue or contraction. The method is not suitable for children, but is indicated for hæmophiliacs and for those whose state of health makes tonsillectomy dangerous.

THE Croonian Lectures of the Royal College of Physicians of London will be delivered at the College at 5 P.M. on Tuesday the 5th, Thursday the 7th, and Tuesday the 12th of June by Dr. Charles Bolton. His subject will be "The Interpretation of Gastric Symptoms."

THE death occurred on May 28th, at the age of 86, of Dr. George Edward Shuttleworth, for many years medical superintendent of the Royal Albert Institution, Lancaster, and the author of numerous works on mental deficiency.

Dr. Abraham Flexner, who recently delivered the Rhodes Memorial lectures at Oxford, has resigned his position as Director of Studies and Medical Education of the General Education Board of the Rockefeller Institute. He proposes to devote his time to writing on university education in Europe and America.

[1] Practical Electrotherapeutics and Diathermy, New York, 1924.
[2] Quoted by A. Hollender and M. Cottle: Physical Therapy in Diseases of the Eye, Ear, Nose, and Throat.
[3] Med. Jour. of Australia, March 17th, p. 336.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXVIII.

TREATMENT OF CANCER OF THE BLADDER.

IT is fortunate that cancer of the bladder is comparatively rare, as there is no organ in the body where malignant disease gives rise to more intense suffering. Vesical neoplasms only form about 0·5 per cent. of all new growths, and about half of them are malignant. Approximately two-thirds of the bladder tumours are found in the male, the age-incidence being 50 to 70. A large proportion of vesical carcinomata arise from villous tumours of the bladder which have undergone malignant degeneration. It is probable that most of these growths ultimately become malignant if untreated, but in a few instances removal of an apparently benign growth has been followed by a definitely malignant recurrence. I have never seen this type of recurrence when the original growth was fulgurated.

Several types of cancerous tumours are found in the bladder. They are the villous carcinoma, the scirrhus, the squamous-celled, and the adeno-carcinoma. Of these the scirrhus form is in my opinion the most malignant. The villous form, when malignant from the start, and not the result of changes occurring in a papilloma, is likely to remain localised for a considerable time, and the operative results are good.

The postero-lateral wall is by far the most common site for all tumours of the bladder. The next most common site is the anterior wall, while they are comparatively rare on the vault. Recurrences are located at the site of the original growth, in the suprapubic scar, or in the aveolar tissue of the pelvis.

Changes in the kidneys and ureters are mechanical and infective. If the tumour compresses the lower end of the ureter the kidney and the upper part of the ureter become dilated from back-pressure. A hydronephrosis or a pyonephrosis is formed according as the urine is sterile or infected. Once cystitis sets in the patient is liable to attacks of ascending pyelonephritis, which may prove fatal. Renal infection is in my experience the most common cause of death after operation.

Symptomatology.

It is impossible to distinguish between the symptoms of a benign and a malignant tumour of the bladder in the earlier stages. It is only when the bladder is infected and the growth advanced that distinguishing symptoms appear. The first and most common symptom is an intermittent, painless hæmaturia. As a rule it lasts for two or three days, and then gradually the urine becomes clear, remains so for weeks or even months, when a similar attack occurs. As a rule, during the earlier attacks the blood is fluid; if clots are found they are small. If the hæmorrhage is profuse, larger clots form, which give rise to pain and difficulty in micturition, and even occasionally to complete retention. In this case they must be washed out through a large catheter, and if this is impossible a suprapubic cystotomy must be performed. The hæmaturia is always terminal; that is, more blood is present in the last portions of urine passed than in the first, and this test serves to distinguish between a vesical and a renal hæmaturia. The presence of large numbers of epithelial cells from the bladder in pus-free urine is highly suggestive of a neoplasm.

Sooner or later cystitis sets in and entirely changes the clinical picture. There is then marked frequency of micturition both by day and night. The act is always extremely painful, the pain increasing in intensity till it culminates in a particularly painful spasm when the bladder is empty, and a few drops of blood are expelled. The bladder capacity is much reduced. As a rule there is no difficulty in micturition unless clots are passed. In the later stage the urine becomes blood-stained and is very foul. It is not usual to find recognisable portions of the tumour in the urine in malignant tumours, although they are frequently observed in benign growths.

Although hæmaturia is a prominent symptom in most cases of vesical carcinoma, blood is sometimes present only in microscopical quantities. A chronic relapsing cystitis is highly suggestive of malignant disease of the bladder, and cystoscopy should not be unduly delayed in these cases.

In the later stages of cancer of the bladder the patient's general condition rapidly deteriorates. Death is usually due to exhaustion or pyelonephritis. If the growth is malignant from the start the duration is often less than a year, and rarely longer than two years. When a benign growth takes on malignant characters the duration of the disease is increased.

Diagnosis.

The diagnosis can only be made by cystoscopy while the patient is still in the operable stage. If the growth is palpable, either on hypogastric palpation or on bimanual examination with a finger in the rectum and the other hand pressing the abdominal wall downwards, it is inoperable. Occasionally an operable growth can be felt on vaginal examination, but in the male a palpable growth is always inoperable. Early cystoscopy is the only means of reducing the proportion (now over 60 per cent.) of growths inoperable when first seen.

The cystoscope enables one not only to determine the presence of a vesical tumour, but also its position and nature, and in most cases its operability. If long and thin villi are easily set in motion by currents in the fluid contained in the bladder, and the whole growth is moveable, it is almost certainly benign. If the villi are short and thick, the stalk thick and rigid, and the whole growth fixed, it is definitely malignant. Irregular puckering, or nodules, appearing in the mucous membrane surrounding the base of the growth are indicative of a submucous infiltration. It is often exceedingly difficult to detect early malignant changes, and if there is any doubt, it is safer to assume that the growth is malignant.

A malignant tumour involving the internal meatus is usually unsuitable for operation; a growth—one situate on the postero-lateral wall—can be removed as a rule, provided there is sufficient margin of healthy tissue between it and the internal meatus; resection, and reimplantation of the ureter, does not materially increase the risk. If the growth involves both ureteric orifices, operation is contra-indicated. Large growths can be removed from the vault or anterior wall of the bladder.

Nodular growths are much more liable to infiltrate the bladder-wall laterally than the villous type. As a rule, operation is unsatisfactory if the growth is more than 2 in. in diameter at its base.

The cytoscope gives no indication if the growth has spread into neighbouring organs, or is involving the lymphatic glands. The first step in the operation is thus always exploratory.

Operative Measures.

The best method of treatment is excision. This involves an extensive resection of the whole thickness of the bladder-wall. The large gap left is closed by a line of continuous sutures passing through the whole thickness of the bladder-wall.

If the growth is situate near the ureteric orifice, the space between the bladder and the lateral wall of the pelvis is first explored. If the glands along the course of the internal iliac artery are enlarged, hard, and matted together, no operation can cure the patient, but if they are only slightly enlarged, and still soft, the operation should be proceeded with. The ureter should be isolated, and a strip of gauze passed round it for future identification. The bladder is then opened, and the growth encircled by an elliptical incision. Any bleeding points are clamped and tied. The large gap in the bladder wall is then sutured from below upwards by means of a continuous catgut suture; this procedure is not easy to carry out. The upper end of the ureter is either implanted into the incision, or is brought through a small puncture in the bladder-wall, and sutured in place. Both the bladder and the pelvis

are drained. After these large resections the cavity of the bladder appears to be very small, but it soon recovers its normal capacity.

Total cystectomy is rarely performed; not only is the disposal of the ureters a difficulty, but if the growth is too extensive for excision the lymphatics are already involved, and the operation is followed by a retro-peritoneal recurrence.

Palliative Measures.

Even when the lymph glands are involved, a resection may relieve the patient entirely of his bladder symptoms, and he may live the remainder of his life in comparative comfort. If the growth cannot be resected, it may be destroyed by diathermy, applied through a suprapubic opening. Radium seeds should then be implanted round its margin. The disadvantage of this operation is that the sloughs may take a long time to separate, and the suprapubic fistula may have to be kept open for several months. The implantation of radium into the growth may be followed by a diminution in the amount of hæmorrhage and a slight amelioration in the patient's symptoms, but I have never succeeded in causing the complete disappearance of the neoplasm. I have only employed radium in advanced and quite inoperable cases; it forms a useful adjuvant to diathermy. I have twice seen recurrences in the abdominal wall entirely disappear under deep X ray therapy, but I have not seen any successes when the growth was actually in the bladder. If deep X ray therapy is employed, the patient's blood should be examined at frequent intervals; if the polymorpho-nuclear leucocytes fall to 2000 per cubic millimetre, the treatment must be stopped. A suprapubic cystotomy does little to relieve pain. The chief indication for this operation is severe hæmorrhage with clot retention. A certain amount of relief may be obtained by turning both ureters out on to the skin, so as to deviate the urine.

Medicinal Measures.

The pain of advanced vesical carcinoma is intolerable, and can only be relieved by morphia. A suppository of morphia and belladonna should be given every night, and a mixture containing hexamine and tincture of hyoscyamus taken in the day time. Hexamine is the best urinary antiseptic provided the urine is acid. If it is alkaline the reaction is usually due to the presence of a urea-splitting organism. In this case it cannot be rendered acid by the administration of acid sodium phosphate or other drugs, and either sandal-wood oil, or hexyl-resorcinal should be substituted for hexamine. Most patients cannot stand bladder irrigation; it usually increases the vesical irritability, but if it can be tolerated it helps to keep down sepsis. Dilute solutions of silver nitrate (about 1 in 10,000) are most efficacious, but if this cannot be tolerated, boric lotion should be substituted for it. Injections of small amounts of antiseptic fluids into the bladder are better tolerated than irrigations. About 5 cubic centimetres of a 20 per cent. solution of gomenol in oil may be injected every other day through a small soft catheter, and left in the bladder. The patient should have a plain easily digested diet. Alchhol, spices, and condiments should be forbidden. Plenty of bland fluids, such barley-water, Contrexèville or Vittel water, &c., should be taken. It is a mistake to restrict the intake of fluid, for micturition is usually less painful if the urine is dilute.

Results.

The operative mortality following resection is about 10 per cent. In my own cases it was nil when the bladder was not infected, and 12 per cent. when infection was present, but as the latter cases greatly exceeded the former, the total mortality was approximately 10 per cent. The late results are surprisingly good. Sir J. Thomson-Walker has found, on following up his cases, that over half of them remained free from recurrence, some for as long as 15 years.

J. SWIFT JOLY, F.R.C.S. Eng.,
Surgeon to St. Peter's Hospital for Stone.

Special Articles.

CARBON MONOXIDE GAS POISONING.*

BY H. HARTRIDGE, M.D., Sc.D., F.R.S.,
PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF LONDON.

1. *How Carbon Monoxide Gas produces Poisoning.*

Carbon monoxide (CO) poisons by chemically combining with the hæmoglobin within the corpuscles and thus reducing the oxygen-carrying power of the blood. It also probably combines with the hæmoglobin present in muscle. The effects of this are not known. It has been proved in high concentrations to affect the action of certain oxidising ferments in some seeds and insects. It is not known whether it produces similar effects in man. It is thought by some authors to have a specific action on the central nervous system because of the intensity of the headache and dizziness.

2. *The Acute Symptoms of Carbon Monoxide Poisoning.*

These are in a mild case, increased circulation rate; increased depth and rate of respiration; headache and dizziness; nausea (sometimes vomiting); muscular weakness; dilated pupils, and a flushed face. In a severe case the symptoms are decreased circulation-rate; loss of consciousness; convulsions, and a pale face. In a fatal case they are usually stoppage of respiration followed by stoppage of the heart. During the mild symptoms the oxygen want produced by the carbon monoxide is compensated (*a*) by increased circulation-rate; (*b*) by increased lung ventilation; (*c*) by vaso-constriction in viscera and muscles (shown by nausea and muscle weakness). This vaso-constriction is probably partly nervous due to the vaso-motor centre, and partly chemical due to adrenalin in the blood; this also causes the large pupils.

3. *The Amount of Carbon Monoxide in Air which Produces Poisoning.*

There is no definitely fatal amount of carbon monoxide (CO) in air since pure carbon monoxide gas could probably be breathed for a very short time without causing any symptoms. The evidence available indicates that two factors are concerned: (*a*) the quantity of carbon monoxide in the air, and (*b*) the time during which this air is breathed. (Tables I. and II.)

TABLE I.[1]

Percentage CO in air breathed.	Time for symptoms to develop.	
	Mild.	Severe.
0·01	—	—
0·02	5–6 hrs.	—
0·03	3–4 ,,	4–5 hrs.
0·04	1½–2½ ,,	2½–4 ,,
0·05	1–2 ,,	2–3 ,,
0·06	¾–1¼ ,,	1½–2 ,,
0·08	30–40 mins.	40–80 mins.
0·10	10–30 ,,	30–60 ,,
0·15	3–15 ,,	15–45 ,,

TABLE II.[2]

Percentage CO—		
In air breathed	In actual hæmoglobin after ½ hr. breathing.	Calculated in hæmoglobin at saturation.
0·06	15	46
0·135	20·5	66
0·18	29·5	72
0·30	36·6	81
0·60	53	90

15 per cent. CO in blood caused noticeable throbbing in the head. Headache and nausea above 25 per cent. approximately. Loss of consciousness at about 53 per cent. Roughly if the CO percentage in air multiplied by time of exposure in minutes equal 1 there may be just noticeable symptoms (and there may be about 10 per cent. CO in blood) (see Table II.). If, when multiplied together they equal 5 mild symptoms may

* Based on a lecture delivered on May 17th at St. Mary's Hospital Institute of Pathology and Research.

be replaced by severe ones (and blood may be about 30 to 40 per cent. saturated). Mice and other small animals killed by coal gas are usually found to have about 80 per cent. CO in their blood. In a fatal case in which a chauffeur was poisoned by a car exhaust, the blood was stated to contain 58 per cent. CO.[3] A given percentage of CO in air is more dangerous to men performing active work than to men at rest. It is also more dangerous to men respiring deeply than to men with shallow breathing. It is also more dangerous to mammals with a high metabolic rate than to mammals with a low—i.e., babies may be more susceptible than adults.

4. *Carbon Monoxide in Coal Gas.*

The danger of poisoning is partly due to the carbon monoxide gas, which varies. Values between 9 per cent. and 18 per cent. are common. The smell of coal gas, which may act as a warning of its presence, cannot be always relied on, for the following reasons: (1) some people cannot smell it at all; (2) the olfactory mucous membrane tires, thus giving the impression that the gas has been dissipated; (3) the amount in the air may rise so slowly that the olfactory mucous membrane is not stimulated. The danger of coal-gas poisoning occurs in connexion with leaky taps, pipes, and water seals, &c. The amount of CO is increased if to ordinary retort coal gas "water" gas is added. This water gas is manufactured by passing steam through red-hot coke, the products being principally hydrogen and CO. The addition of water gas to coal gas is quite common. The danger of poisoning from the CO contained in coal gas is enhanced by the presence of irrespirable gases, the amount of these latter varying from 60 per cent. to 70 per cent. The explanation is that when a mixture of air and carbon monoxide gas is breathed there is competition between the oxygen of the air and the carbon monoxide for the hæmoglobin in the corpuscles. If the oxygen tension is decreased relatively more CO is able to effect combination. The presence of irrespirable gas by lowering the oxygen tension facilitates the entry of the carbon monoxide and thus increases the risk of poisoning. Carbon dioxide gas (CO_2) is also present in coal gas; values 2·5 and 3·5 per cent. are common. In men and animals, carbon dioxide, which stimulates the respiratory centre, may increase ventilation and thus facilitate the access of carbon monoxide to the blood passing through the lungs. This factor is probably of small importance since the amount of CO_2 in ordinary coal gas is small, but it becomes of increasing importance in gaseous mixtures, to which reference will be made, where much higher percentages of CO_2 are met with. Because of the irrespirable gases and the CO_2 in coal gas its toxicity is roughly double that which its CO content alone would suggest.

5. *Carbon Monoxide in Producer Gases.*

Various other combustible gases are made and used in commerce; the analyses of some of them are given in Table III.

TABLE III.[4]

Type of gas.	Percentage of certain gases by volume.				
	H_2	CH_4	CO	CO_2	N_2
"Blue" water gas ..	52·0	1·0	38·0	4·5	4·5
Carburetted water gas ..	35·0	13·0	32·0	4·5	5·5
Mond gas	27·5	2·0	11·0	16·5	43·0
Dowson gas	20·0	1·0	24·0	6·0	49·0
Suction ,, ...	16·0	—	34·0	3·0	47·0
,, ,, ...	16·0	2·0	22·0	6·0	54·0
Blast furnace gas ..	3·0	1·0	26·0	9·0	58·0
Coke oven gas ,, ..	53·0	35·0	6·0	2·0	2·0

The danger of these gases is largely due to the carbon monoxide which they contain, but this, as explained above in Section 4, is increased by the presence of irrespirable gas and of CO_2. In addition, some of these gases are without odour.

6. *Carbon Monoxide in the Products of Incomplete Combustion.*

Whenever charcoal hydrocarbons or other chemical substances containing carbon are burned with insufficient air carbon monoxide is largely to be found in the gaseous products of combustion. Sometimes the air is restricted intentionally in order that the gases produced may reduce—e.g., some metal ore present. In other cases the restriction is not intentional but is unavoidable, as, for example, in an anthracite stove. In others, again, it is accidental—for example, a gas stove with a closed air inlet.

This classification is not always very easy to apply, so that I have grouped these cases together as follows: Carbon monoxide may be found in the gaseous products from (*a*) engines burning coal, coke, anthracite, wood, alcohol, paraffin, petrol, benzole, coal gas, producer gas, petrol gas, &c.; (*b*) stoves, furnaces, or flames burning any of the above. The presence of CO in these products is naturally not dangerous of itself, but only when as the result of certain circumstances the products are respired by men or animals. For example, an anthracite stove may be correctly installed and used. As the result of a cowl jamming the wind causes a draught down the chimney. In consequence the products of combustion fill the house. Gas cookers (kitchen ranges) are frequently fitted without any direct ventilation.

Carbon monoxide may enter the room (*a*) as a result of faulty burner design or adjustment; (*b*) accidental stoppage of orifices or displacement of parts; (*c*) accidental firing at the gas inlet (firing back); (*d*) a cold surface in contact with the flame may cause it to go out before complete combustion has been obtained.

7. *Carbon Monoxide in other Gases.*

These form a miscellaneous group which may be classified as follows: (*a*) Natural gases—e.g., volcanoes. (*b*) Incomplete combustion of carbon, other than those mentioned in paragraph 6—e.g., underground combustion of wood or coal, or tobacco smoke, dangerous presumably only when inhaled. (*c*) The gases produced by explosives. (*d*) Cases where carbon compounds are being dealt with by catalysts or enzymes. The intestinal gases of herbivora are stated to contain carbon monoxide. I have found CO in sheep's blood obtained from the butcher.

8. *Carbon Monoxide in Petrol Motor Exhaust.*

As might be expected the amount of carbon monoxide in the exhaust gases of motor-cars varies greatly. It varies with the completion of the combustion and also with the ratio of fuel to air. So long as there is free oxygen in the exhaust the quantity of carbon monoxide is small. But before the oxygen has completely disappeared from the exhaust gas carbon monoxide is present in noticeable content, and it is found in increasing amounts as the mixture is made richer. Table IV. shows not only the way that decrease of oxygen is accompanied by increase of carbon monoxide, but shows also the way that the power developed by the engine varies.

TABLE IV.[5]

Ratio air to fuel.	Power developed.	O_2 per cent.	CO per cent.
23·9 to 1	9·8	7·6	0·0
20·1 to 1	15·5	4·8	0·0
18·1 to 1	18·1	3·8	0·4
17·2 to 1	18·5	2·1	0·1
15·5 to 1	19·7	0·6	0·4
14·0 to 1	20·0	0·4	2·4
13·5 to 1	19·9	0·2	4·0
12·5 to 1	19·8	0·1	6·3
11·5 to 1	19·8	0·2	8·1
10·9 to 1	19·9	0·4	10·6
9·9 to 1	20·0	0·6	12·1
8·2 to 1	15·1	0·0	15·3

Inspection of the table will show that the power developed by the engine rises rapidly as the mixture

is made stronger from 23·9 to 1 of fuel to 18·1 of air to 1 of fuel. From this point onwards the power of the engine rises slowly to a maximum, forms a slight plateau, but stays for practical purposes at the same value until the mixture reaches the ratio of 9·9 air to 1 of fuel. A stronger mixture than this causes a sharp fall in the power. The oxygen in the exhaust falls fairly steadily from 7·6 per cent. to 0 per cent., whereas the carbon monoxide steadily rises from 0 per cent. to 15·3 per cent., and the important point should be noted that unless there is some carbon monoxide in the exhaust the full power of the engine will not be developed. And not until there is 15·3 per cent. carbon monoxide in the exhaust will the power of the engine fall off noticeably. Now it is an unfortunate fact that a carburettor with given sized jet and air passages will produce a weaker mixture at slow speeds than at fast, and, what is more important, a weaker mixture when the engine is cold than when it is hot. The cause of this is that as air is warmed it expands, and so a smaller weight of hot air will enter the engine than would be the case if the air were cold. On the other hand, a greater weight of warm petrol will enter the engine than would be the case if the petrol were cold, because petrol decreases in viscosity as it becomes hotter, and so a greater weight flows through the jet in a given time.

The mixture, therefore, becomes richer as it becomes hotter, since the petrol increases but the air decreases. If, then, the carburettor is so adjusted that it gives a mixture which will fire well and develop nearly full power when the engine is cold, it is certain to give an unnecessarily rich mixture when the engine is hot. It is for this reason that the average motor-car in adjustment is found to produce an exhaust containing about 4 to 10 per cent. carbon monoxide. There is also present in the exhaust irrespirable gas and carbon dioxide gas, and therefore the three factors discussed in the case of coal gas are all present. The poisonous effects of exhaust gas are therefore greater than its carbon monoxide content alone would suggest. In addition there may be unburned petrol vapour. The symptoms of this are not very unlike those of carbon monoxide poisoning—dullness, dizziness, sickness, and weakness of bowels. The principal points of difference are, there is no flushing and no increased rate of heart and respiration as in the initial stages of CO poisoning. In addition, there may also be present nowadays in the exhaust compounds of lead as the result of lead tetra-ethyl in the exhaust.

It would be digressing from my subject to give full details, but these points may be mentioned: The symptoms of lead tetra-ethyl poisoning[6] are usually insomnia, headache, sickness, pallor, loss of weight, itching of skin, muscular weakness, and tremor. Unlike ordinary lead poisoning there is no lead line round the gums and no abdominal pain. But like ordinary lead poisoning lead is found in both fæces and urine; the latter is very acid. With adequate precautions there is no evidence that harm will result to the user of ethyl petrol.[7] Men engaged in its manufacture or blending run much greater risk. Present-day petrol engines will probably not be found to give improved results with its use. Engines to be designed in the future with high compression ratios may be expected to give somewhat greater efficiency. The risk of motor-car exhaust poisoning in the open country is negligible. Poisoning may occur in tunnels under rivers, traffic blocks, closed garages, and bench tests in workshops. Leakage of exhaust gases and gas from the crank chamber into saloon cars is a likely cause of poisoning, as also is the case of exhaust heated radiators and foot warmers.

9. *The Tests for Carbon Monoxide.*

Carbon monoxide may in a suspected case be tested for either in the air or in the blood of men or animals which have been exposed to that air. The tests for carbon monoxide in air are: (1) mice or small birds; (2) combustion and estimation by heat generation [9]; (3) combustion and estimation as carbon dioxide (Haldane's method); (4) iodine pentoxide; (5) ammoniacal chloropalladate [10]; (6) ammoniacal silver nitrate; (7) absorb by blood and estimate the CO in it.

For the quantitative estimation of carbon monoxide in blood the following methods have been used: (8) the carmine method (Haldane); (9) the tannic pyrogallic acid method [11]; (10) the reversion spectroscope [12]; (11) the photographic method.[13]

I have no personal knowledge of method (9). It is said to estimate carbon monoxide in blood with an accuracy of 5 per cent. The carmine method has the disadvantage of requiring good daylight for the titration, because daylight has a photo-chemical effect causing carbon monoxide to leave blood. Method (10) in practised hands is accurate to 5 per cent., method (11) to 2 per cent. With special technique these values may be halved. The corresponding values for CO in air would be 0·008 and 0·003 per cent. Method (10) has the advantage that the quantity of blood required for a test is small; 0·1 c.cm. is ample.

10. *Prevention and Treatment of Acute CO Poisoning.*

Prevention consists: (1) In preventing access of the carbon monoxide-containing mixture to the lungs of men and animals, by the provision of suitable flues, pipes, taps, meters, &c. (2) In the provision of suitable tests so that the adequacy of such flues, pipes, &c., can be periodically tested. (3) In the provision of suitable masks [8] so that if men have to enter a poisonous atmosphere they may be adequately protected. (4) By the provision of suitable remedies so that if any of the above precautions fail life may not be lost. The remedies consist of oxygen in cylinders or better oxygen 50 per cent. carbon dioxide in cylinders and a mask or funnel for administering same. In addition hot-water bottles should be ready to hand since warmth has been shown to be an important factor in saving life from carbon monoxide poisoning. Artificial respiration may be necessary. Stimulation of the respiratory centre by injections of potassium cyanide has yet to stand the test of time. Blood transfusions may be resorted to.

11. *Chronic Carbon Monoxide Poisoning.*

Cases of acute CO poisoning are fairly clear as a rule Chronic cases are not so readily diagnosed. The amount of CO in the blood at any time may be small and in the absence of special apparatus may not be detectable. As with acute CO poisoning I think we are justified in dividing cases into two classes—those in which compensation takes place and those in which it does not. The former compensate for the CO present in the blood by correspondingly increasing the oxygen-carrying power of the blood. This may be done by increasing the number of corpuscles per cubic millimetre of blood or increasing the hæmoglobin (colour-index) per corpuscle. The change would not be obviously different from that which follows living at a high altitude, where the oxygen tension in the air is below the normal value.

In the uncompensated cases, on the other hand, the reduction in the oxygen-carrying power of the blood seems to act almost as "the last straw." Numerous and varied are the conditions which are stated to follow the chronic poisoning: Pneumonia, tubercle, anæmia, &c. It is particularly necessary therefore that adequate diagnostic methods should be available. Birds and other small mammals are useless for testing for the amount of CO in air which will produce chronic poisoning, since tests show that their blood takes up less CO at a given per cent. CO in air than the blood of man. Tests of much greater precision are required. The symptoms of uncompensated CO poisoning may be shortness of breath, particularly on exertion, headache, pallor, weakness, sleeplessness, coldness in the extremities, and depression. The treatment is, of course, to find out the cause and to stop it, and to give the patient fresh air, tonics, and good food, and plenty of outdoor exercise.

12. *The Medico-Legal Aspect.*

Acute CO Poisoning.—In acute carbon monoxide poisoning the symptoms and history of the occurrence must usually make a decision fairly easy. If in addition there is the evidence of an expert as to the amount of CO in the patient or in the air he was breathing no questions would appear possible. But if this evidence is lacking and the patient is only examined some time after the incident then difficulties may arise. Even after the lapse of many hours, however, a delicate test may enable CO to be found in the blood since the rate of excretion is slow particularly as the percentage still in the blood approaches zero. Thus after 30 per cent. CO in the blood some may usually be detected eight to ten hours later. If the amount is measured and the numbers of hours since exposure is known the probable amount present at the maximum may be roughly inferred.

Chronic CO Poisoning.—Here the symptoms are more vague, the history as a rule less certain. But, as in acute cases, reliance should be placed on finding CO in the blood. If none is found it does not exclude the possibility from a medical standpoint, for the circumstances may be such that the amount of CO in the blood fluctuates, and at the time of the test the amount may be below the threshold value for the test that is used. In such a case further tests at other times of the day should be made with the man engaged in his ordinary routine, and tests of the air should be made at his home and his business.

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MEDICINE AND THE LAW.

Income-tax Subtleties.

HIGH taxation is notoriously a reason for the diminition of voluntary gifts to charitable foundations, and the committees of hospitals and similar institutions are keenly interested in any possible concession. Some years ago the University College of South Wales and Monmouthshire appealed for a sum of £250,000 for general development and for the particular object of its physics and chemistry laboratories. There was reason to believe that, if donors made contributions out of taxed income and spread them over a period of seven years, the College would not only benefit by the contributions themselves, but would also be able to reclaim the amount of the tax already paid. Certain generous donors then entered into formal covenants undertaking to pay the College out of their taxed income a specific sum in quarterly instalments during the next seven years. These instalments they duly paid, but the Inland Revenue authorities were unable to fall in with the plan. One must distinguish, it seems, two different ways of expressing the covenant in benefactions of this character. One way is to promise to pay a specific annual sum out of taxed income yearly for seven years; in this case the Inland Revenue appears to be willing to hand back the tax if it is claimed by the institution which receives the benefaction. The other way (the form adopted in the University College instance) is to promise to pay a capital sum spread over seven years; in this case the Inland Revenue refuses the refund. Having framed their promises in the form unacceptable to the Inland Revenue authorities, the benefactors went to the Court of Chancery and asked that their promises might be rectified. A benefactor, whose total gift was to be £28,000, requested that the following words should be struck out of his covenant "during seven years . . . I will pay from my general fund of taxed income, in quarterly instalments, the sum of £28,000 net," and that the following words should be substituted "for seven years . . . I will pay from my general fund of untaxed income on April 1st, July 1st, Oct. 1st, and Jan. 1st in each year the sum of £1000 net." The University College of South Wales was formerly made a defendant in the action but, naturally, did not object, and therefore allowed judgment to be entered in default of any defence. Mr. Justice Astbury made the orders for rectification as requested, but confessed he could see very little difference between promising to pay £7000 in annual instalments and promising to pay seven annual instalments of £1000 each. The plaintiffs had invited the chief inspector of taxes to intervene in the proceedings, but the Board of Inland Revenue was not to be drawn. It refused to intervene and it declined to be taken to be supporting the application. Thus there seems no certainty yet that the University College has made sure of its claim for refund of tax. It is hard enough to master the law of income-tax; even when there is no doubt of the law, there remains a doubt of what policy the Inland Revenue authorities will adopt. Though it is not their function to be prodigal with money which has found its way into the Exchequer, it would be kind of them to make clear the exact circumstances in which tax will or will not be refunded.

Dairyman Imprisoned.

An Ilford dairyman, who had supplied milk diluted with 5 per cent. of added water, was sentenced last week at the Stratford Police Court to a month's imprisonment with hard labour. A fine is usually considered a sufficient penalty upon a retailer who offends against the Food and Drugs Acts, but this defendant had previously been fined six times for offences in connexion with the supply of milk in the past 12 years. The chairman of the Bench described him as a pest who continually defied the law and robbed the public. There was a second charge, for obstructing two inspectors of the Essex County Council; in respect of this he was sentenced to £25 with the alternative of a month's imprisonment. It would be to the public advantage if the law allowed a court to make an order debarring such habitual offenders from taking any further part in the sale of food.

LISTER INSTITUTE OF PREVENTIVE MEDICINE.

ANNUAL GENERAL MEETING.

AT the annual general meeting held on May 23rd, a tribute was paid to the memory of Lord Iveagh, whose endowment of the Institute, in 1898, enabled the objects for which it was founded to be pursued on a much larger scale. The Governing Body records its appreciation of the continued coöperation it has enjoyed with the Medical Research Council, the Department for Scientific and Industrial Research, and the British Empire Cancer Campaign. The department of Biochemistry has been entrusted by the Medical Research Council with a lengthy inquiry into the vitamin-content of Empire products and the effect of preservation and storage thereon. Dr. S. S. Zilva is in charge of the investigation, the cost being defrayed by a grant from the Empire Marketing Board.

Department of Bacteriology.—During the past year Prof. J. C. G. Ledingham has elaborated a method

of propagating vaccine virus in the dermis of the rabbit. Following on his discovery three years ago, that small-pox material taken direct from man was capable of producing a marked response in the dermis of the rabbit, he has attempted to pass the small-pox virus from rabbit to rabbit with only moderate success. The passed material from the dermis seems to lose its virulence rather rapidly and the cause of this requires further investigation. As a laboratory test for small-pox the intradermal inoculation of the rabbit with human material is recommended. Dr. C. H. Eagles and Dr. D. McClean are using the dermal vaccine as seed in their experiments on the cultivation of the virus in vitro in association with chicken embryo. Studies on bacterial variation and the antigenic structure of bacteria have been undertaken by Dr. J. A. Arkwright. Working on *B. typhosus* he has examined the conditions of agglutination by serum and acids, concluding that substances agglutinable by serum and by acid are probably identical. An investigation by Dr. H. Schütze of 18 strains of *B. pseudotuberculosis rodentium* and related organisms has resulted in their classification into three types; one of the pseudotuberculosis groups has a serological affinity with certain Salmonella strains.

The action of the toxin of *B. welchii* on red cells in vitro has been studied by Dr. Orr and Dr. Campbell in view of the claim that *B. welchii* plays some part in the ætiology of pernicious anæmia and that a form of chronic anæmia can be produced in animals by inoculation with cultures of this organism. They have exposed emulsions of red cells to the action of filtered broth cultures of *B. welchii*, these filtrates containing a hæmolysin of variable strength. It was found that the red cells passed through definite changes, microcytes appearing first, followed by macrocytes, and these again by a stage in which the majority of the remaining cells have resumed their normal diameters. This change in size was not met with when other hæmotoxins—e.g., from *V. septique*, *B. tetani*, streptococci, and straphylococci, &c.—were used. By using blood which had been reduced hæmolysis could be speeded up considerably; and the change in size, moreover, proceeded at a more rapid rate than when ordinary oxygenated blood was used. The interpretation of these observations and their possible relation to the blood picture of pernicious anæmia are under consideration.

Among the many researches in progress are those concerned with the vitamins. Dr. Zilva has worked on the relation of the reducing capacity exhibited by substances rich in vitamin C to their antiscorbutic activity. It transpired that in spite of the close association, the reducing agency and the active principle are not identical, but that the former contributes to the stability of the latter. It was found that the reducing agency is not the only stabilising principle associated with antiscorbutic solutions. An inquiry on the variation of the antiscorbutic factor in apples has been started by Dr. Zilva and Mr. Hoyle. Apples grown and stored under carefully controlled conditions and apples of known history from the various Dominions are being investigated. The results so far obtained make it clear that the vitamin content of apples is by no means uniform and that it is controlled by various physiological factors. Dr. Smedley-MacLean has continued her investigation of the nature of the unsaponifiable matter of yeast fat, now the main source of ergosterol (provitamin D), and has isolated from it a second sterol, to which the name of zymosterol has been given. Zymosterol is distinguished from ergosterol by its greater solubility in organic solvents, its dextro-rotation, and the absence of selective absorption in the ultra-violet region. The biological properties of the irradiated sterol are being tested in conjunction with Miss E. M. Hume and Miss Henderson Smith.

Department of Experimental Pathology.—The testicular and prostatic hormones have been studied by Dr. V. Korenchevsky, in coöperation with Miss M. Schultess-Young, also the effect of ovarian extract of parathyroid extract, and of pituitary gland on nitrogen metabolism. The two active constituents of water-soluble B vitamin have been further examined by Dr. Harriette Chick and Miss H. M. Roscoe. They suggest that these should be called, provisionally, vitamin B_1, the antineuritic, more heat-labile, constituent and vitamin B_2, the so-called "anti-pellagra," more heat-stable constituent. When young rats receive a diet complete in all respects, but devoid of vitamin B_1, they survive only 3–4 weeks and die with or without symptoms of paralysis. If, on the other hand, the diet is deficient only in vitamin B_2, life may be prolonged for 2–3 months or longer, but there is no significant increase in weight, and growth is at once restored if vitamin B_2 is given. A concentrated preparation of the antineuritic vitamin B_1 can be prepared, which is devoid of vitamin B_2. Attempts are now being made to isolate the other vitamin and to investigate its distribution in different whole cereals and their constituent parts. The existing knowledge regarding the distribution of what was called vitamin B has been compiled chiefly on the results of experiments upon the prevention and cure of polyneuritis in pigeons and, therefore, has reference only to distribution of vitamin B_1. The curious phenomena named "Refection," the spontaneous occurrence of the capacity to thrive on diets deprived of B vitamins, which has been studied recently by L. S. Fridericia and his colleagues in Copenhagen, was also discovered independently at the Institute. The most reasonable explanation, and the one adopted by Fridericia, is that the alimentary tract of the animal becomes infected with some yeast or other organism and thus the materials are produced which are needed to correct these different defective diets. The titration respectively of vitamin A and of vitamin D has been the subject of investigation by Miss Hume working with Miss Henderson Smith, and Miss K. M. Soames working with Miss J. L. Leigh-Clare. The assessment of the proportion of the total energy absorbed when sunshine falls upon the skin has engaged the attention of Sir Charles Martin for some considerable time. As the amount absorbed cannot be directly measured, it was hoped to arrive at it by determining what was not absorbed—i.e., the amount irregularly reflected. Some interesting comparative data were obtained, and certain difficulties having recently been surmounted, it is hoped that quantitative measurements will soon be obtainable.

Dr. T. Lumsden, with the assistance of Miss A. C. Kohn-Speyer, continued his investigations into the feasibility of producing a vaccine effective against malignant tumours.

The Department of Protozoology has made further experiments upon *Bodo caudatus* exposed to the influence of acriflavine, and Dr. H. M. Woodcock has continued his work on the encephalitis of rabbits. Rabbits have been successfully inoculated intracerebrally witn an emulsion of an infected kidney of a dying rabbit.

Department for the Study and Preparation of Antitoxic Sera.—Research in this department has been concerned with the preparation of plague toxins and of anti-plague serum, the use of formalised antigens in the production of therapeutic sera, and the experimental production of pneumococcal endocarditis, and of arteriosclerosis in rabbits.

Investigations on Foot and Mouth Disease, for the Research Committee of the Ministry of Agriculture, have been continued at the Institute during the year in the special laboratory and animal house set apart for the purpose, under the supervision of Dr. J. A. Arkwright. The lines of investigation pursued have included an inquiry into the cause of the restriction of the lesions to the feet and mouth; the fate of the virus in the bodies of convalescing animals; the survival of the virus upon various materials, and under a variety of conditions; the susceptibility of wild animals to infection, and a general study of

artificially induced immunity to foot and mouth disease. The Third Progress Report of the Foot and Mouth Disease Research Committee will be published shortly.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Conflicts in the Medical Profession.

THE increasingly difficult position of physicians in this country has divided the profession into three distinct groups: (1) doctors employed in full or in part by the *Krankenkassa*, or sick-clubs, numbering about 1200; (2) independent doctors with no fixed salaries, of whom there are about the same number; and (3) hospital staff doctors, university lecturers, and medical officers of health, some 2000 in all. The last group sometimes throws its lot in with the first and sometimes with the second, according to personal interests. The clash of interests between the three groups was recently manifest when the Government, or rather the political parties, attempted to win the votes of certain sections of the community by organising a new sick-club for bank employees and certain business and factory clerks. The formation of such a club would result in a large and by no means poverty-stricken section of the community being taken out of the hands of the private practitioner. The organisation of Vienna doctors refused to accept the proposal, and as its president, together with a fair proportion of representatives of the sick-club doctors, favoured the Government's plan, he was forced to resign. After a very heated election campaign the representative of the independent doctors, Dr. Weinländer, was elected president by a small majority. Thereupon the other group threatened to separate from the organisation, and the danger of a split in the profession seemed imminent. The conservative elements in both groups were anxious to bring about a reconciliation, and a few days ago we learned that some sort of an understanding had been reached which will enable all medical men to partake of the opportunities afforded by the formation of a new big sick-club. Only a few appointments with fixed salaries will be made for members living in outlying districts, all other members being allowed to choose their physician and specialist from a panel of doctors. Payment will be made at a fixed scale according to work done—i.e., for each consultation or call. This means that the practitioner will have to work for lower fees than those paid by private patients, but these are gradually disappearing. He does not lose his private patients entirely as they may come to him as panel patients. The sick-club doctors on their side have consented not to oppose the attempt which is being made to remove from membership of the sick-clubs those persons whose income is above £25 to £30 a month. A certain section of wage-earners should thus be left to the private practitioner. The profession is also trying to bring this condition concerning income into force in the other sick-clubs, especially amongst railway, municipal, and state officials. Many of these have salaries of £50 to £80 a month. Yet they are all compulsory members of the sick-clubs though this income is considered large in this country, being greater than that of most medical practitioners.

Voronoff's Operation.

At a recent meeting of the Vienna Society of Physicians Dr. Schleyer showed two patients who six months previously had undergone Voronoff's operation, which consists of implantation of part of the testis of a monkey into the testis of a man. The patients were 70 and 56 years of age respectively, and their condition before operation was typical of senility, showing loss of mental and physical strength, with forgetfulness, fatigue, impotence, and loss of libido. No change was noticeable for five weeks after the operation, but the older patient then stated that he was beginning to feel much better, and after nine weeks he again had erections; the younger also felt stronger and was more active. Both men are satisfied and look strong and healthy. In the discussion which followed Dr. Schönbauer, from the Eiselsberg Clinic, reported on four Voronoff operations, two of which had had good results, and two of which had been failures. Experiments have been made in the clinic on the transplantation of testicles from one monkey to another, and it was shown that the transplanted gland was always destroyed, microscopical examination showing that destruction took place within three months. Dr. Bachrach says that he has got the same results as Voronoff claims for his method by implanting testicular tissue into the muscles of the abdominal wall. Prof. Bauer, who at first was sceptical about the results of the operation, had to admit that even excluding auto-suggestion the improvement of somatic conditions is undeniable. He thinks that the implantation of young glandular material into testes suffering from regressive changes causes a distinct renewal of their function. Suggestion must be excluded, for the favourable results do not appear till some weeks after the operation. Prof. E. Schwarz is not in favour of the word "rejuvenation," since he believes that the normal physiological process of senility cannot be prevented by our interference. Transplantation—an operation which can be repeated several times—simply results in a temporary renewal of the production of testicular hormone, and this disappears with increasingly short intervals after each transplantation. Death cannot be averted. The effect, as Voronoff himself has stated, lasts at most from two to four years, but even this added period of well-being is important to the aged, as Dr. Schleyer remarked in summing up the discussion.

Statistics of Practitioners in Vienna.

As a result of the registration of medical men now being carried out by the Vienna Board of Health, some interesting facts have come to light. The youngest practitioner (apart from hospital doctors) is 23½ years of age, and the oldest 87. The majority enter the ranks of wage-earners at the age of 29½ (40 per cent.), whilst only 12 per cent. settle down after the age of 36. More than 70 per cent. of all practitioners are between 40 and 65 years, and 9 per cent. of the total are women. There are 3·5 doctors per 1000 inhabitants, and 3·8 women doctors per 10,000 female inhabitants. Whilst only 11 per cent. of the population of Vienna are Jews, they form over 30 per cent. of the profession. Only Austrian subjects are practising here, but over 20 per cent. are foreign born—i.e., were born in places now situated outside the Austrian Republic. More than 22 per cent. of the total are specialists, and 10 per cent. are dental surgeons. About 2000 medical men (apart from the dental surgeons) have a telephone, and no doctor is allowed to practise in two separate places. Panel doctors, however, can use their own consulting-room for private patients if the *Krankenkassa* provides them with another one elsewhere for their panel patients.

PARIS.

(FROM OUR OWN CORRESPONDENTS.)

B.C.G. Vaccine.

THE extent to which the daily press in Paris has commented on the recent discussion at the Academy of Medicine on B.C.G. vaccine is a sign of the interest taken in this matter by the man-in-the-street. The fact that 81,600 infants have been inoculated with the vaccine in France alone, between July 1st, 1924, and May 1st, 1928, shows how extensive has been its employment, and in as many as 75,000 cases it has been given to infants in non-tuberculous surroundings. This is a point of the greatest importance; no one, apparently, had any cogent objections to raise to the use of B.C.G. in infants born into tuberculous surroundings. The immediate and ultimate effects of B.C.G. inoculation might be rather unpleasant,

but they were obviously the lesser of two evils when the chances of a tuberculous infection were great. But—and this was the point on which Prof. Lignières insisted repeatedly during the discussion—is it at the present stage justifiable to inoculate healthy infants in healthy surroundings with a live virus about whose ultimate fate in the body insufficient information is available? In support of his hesitation on this score, he drew attention to the frequency with which Dr. Tzekhnovitzer, of Kharkoff, found rabbits, inoculated with B.C.G., to die of unknown causes. He implied that the B.C.G. might at any rate have been a contributory factor in some, at least, of these deaths. With regard to Calmette's statistics, Lignières suggested that if these are to be beyond reproach the best procedure would be to inoculated every other infant and animal concerned. Calmette's defence consisted of stressing the hypothetical, problematical, theoretical, suppositious, quasi-prophetic character of the criticism advanced, and he concluded with the statement that he had not yet been faced by a single observation of a case of an infant, born or brought up in healthy surroundings, inoculated with B.C.G., and dying of a tuberculous infection caused by B.C.G.

The Association for Developing Medical Relations is organising a number of courses to be given in English at Paris. The subjects include operative surgery, cardiology, pediatrics, and ophthalmology, and further announcements will be forthcoming later.

A course in dermatology and venereology will be held at the clinic for cutaneous and syphilitic diseases at Strasbourg from Sept. 17th to Nov. 3rd, under the direction of Prof. L. M. Pautrier. Those who attend will be given the opportunity of personally applying the various methods of treatment, and will have free access to the clinic outside the hours of the lectures. Applications should be sent to Prof. Pautrier, 2, Quai St. Nicolas, Strasbourg, who offers to send particulars of accommodation in the city.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Tularæmia: Human Autopsy.

AN autopsy made in St. Mary's Hospital, Duluth, Minnesota, on a man who died 16 days from the known inoculation of the disease, shows that the pathology of tularæmia in man resembles very closely that already demonstrated in animals. The infection in this case was virulent. Two days from inoculation the patient was compelled to take to his bed and the disease progressed through cyanosis and stupor to death, which occurred before the positive serodiagnosis for tularæmia had been returned from the State laboratory. The inoculation had taken place in the middle finger of the left hand from the ulcer on which a purulent exudate was expressed at autopsy. The epitrochlear gland was considerably enlarged, and there was enlargement of a few left axillary glands. Definite nodules were found scattered over the pleura of each lung, in the lung substance, in the liver, kidneys, and spleen (particularly concentrated beneath the capsule). There was broncho-pneumonia in both lungs. In the intestines Peyer's patches of solitary follicles were found swollen and congested. Microscopically the nodules of tularæmia closely resemble miliary tubercles. The nodule, however, grows much more rapidly than in tuberculosis and attains a much greater size. It tends to depress the surface of the affected organ rather than to elevate it, and is slightly irregular. Giant cells, though they have been found in previous cases of tularæmia, were not present in this case, which terminated more rapidly than any previous case that has come to autopsy.

Destruction of Mouse Sarcoma by High-frequency Currents.

Remarkable success in the destruction of a transplantable sarcoma in mice by high-frequency electrical oscillations is reported by Dr. J. W. Schereschewsky,[1] of Harvard University and the Public Health Service. The frequencies that have been most successful have been between 68,000,000 and 66,000,000 cycles per second. The effect of treatment is immediate and pronounced, and a small tumour of 485 mm. may become almost impalpable. A reaction follows in 24 hours with œdema of the treated area. In favourable cases, when the œdema had subsided, the remains of the tumour grew smaller and smaller until they disappeared. When the current used is 300 milliampères or less the skin disturbance is slight. When more powerful currents are necessary some superficial necrosis of the skin results. The percentage of recovery of 403 mice was 25 per cent., the remainder dying, mostly of intercurrent infection, before the death of the last control mouse. In the controls no spontaneous regression was observed. Only 5·5 per cent. of the treated mice actually died from tumour. Some success also has been achieved with the Rous fowl sarcoma, and Dr. Schereschewsky thinks that a different frequency may be more successful in this latter tumour. (A frequency of 135,000,000 proved to be useless in the mouse sarcoma.)

As to how the result is achieved little is known. The thermal effect of these very high frequencies, unlike that of medical diathermy, is slight. Sections of the tumour after treatment were examined by Dr. S. B. Wolbach, who reported as follows:—

> "In general, the immediate effects of the agency . . . is necrosis to the tumour cells and accompanying vascular and connective tissue structures. The general picture produced is that of so-called coagulation necrosis and the most familiar corresponding picture that I know of is in completely infarcted tissues. A very striking phenomenon, however, as brought out in the slides, is the extraordinarily rapid disappearance of the necrotic tumour. I am quite unfamiliar with anything corresponding to it. In the few microscopic preparations submitted one gets the impression that there has been very rapid solution, possibly solution by autolysis (?) of the cells including the nuclei."

The most serious limitation to the method is that, so far, it has been possible to apply it only to subcutaneous tumours.

The Detroit Department of Health has recently made an interesting survey in an attempt to discover what are the factors which are preventing the public from making use of toxin-antitoxin. A sample of 100 cases of diphtheria was chosen and in each case the parents were asked to state the reasons why their children had not been protected. In nearly one-half the cases (45) the reason was given as plain procrastination. This makes evident the duty of the family physician to urge the importance of this measure and the dangers of delay. In 14 cases the parents had not heard of toxin-antitoxin and only in nine cases did the parents urge that they had no faith in this method of prevention. In nine cases fear of pain had been the hindrance.

The Parker Bill for the coördination of the public health activities of the federal government was passed last month by the House of Representatives. Besides facilitating the exchange of personnel between different bureaux of the health service the Bill will establish a corps of nurses and a national advisory health council and will increase the scope of the hygienic laboratory. It has still to receive the approval of the Senate and the signature of the President.

The fifty-seventh annual meeting of the American Public Health Association will be held in Chicago from Oct. 15th to 19th. The American Child Health Association and the American Social Hygiene Association will meet with this organisation

[1] Public Health Reports of the U.S. Health Service, April 20th, p. 927.

Correspondence.

"Audi alteram partem."

HIDEYO NOGUCHI.

To the Editor of THE LANCET.

SIR,—I wish to add a tribute to that paid in your columns last week to the memory of Dr. Hideyo Noguchi, whose untimely death from yellow fever at Accra on May 21st has deprived the world of one of the most distinguished scientists of our time. It is all the more regrettable as the investigation into yellow fever had but a short time previously claimed the life of Prof. Adrian Stokes, and science can ill afford such irreparable loss.

My first introduction to Noguchi was at the Rockefeller Institute in New York in 1922, within a few days of my arrival. There was a tap on the door of my room and in came Noguchi. He introduced himself, inquired about my welfare, and asked if he could be of any assistance. I was very impressed that this great man should seek me out and offer his friendship, but such was characteristic of Noguchi. I was a frequent visitor to his laboratory. He was never too busy to show me his technique, discuss problems, or demonstrate his experiments. Many a time, working late at night, I have passed Noguchi's room on leaving the Institute, and seeing the lights on, I entered. He would be busy, with the tables in his whole suite of rooms covered with innumerable cultures and specimens. A few words of welcome and a smile were always assured from him, and he seemed to welcome the break and would chat for some time. I never knew what time he stopped work. Noguchi was a hard worker, and when deep in a problem he took no cognisance of time. He did his microscopic work in the quiet of his own home, and there might find something which demanded laboratory work. He would set off at once to the Institute, arriving there any hour of the day or night in a taxi (he always travelled in taxis) and immediately engage himself in the new aspect of the work. Noguchi was a "mass" worker, and I think that was one of the secrets of his great success as a scientist. He persisted at his problems, carrying out numerous experiments, using great quantities of material; whereas the average laboratory worker trying out a new medium for some hitherto uncultivated organism might use, say, a dozen tubes, Noguchi would use hundreds. The organism might grow in only one of the tubes, but still it was there cultivated. Similarly, in his animal work it was not uncommon for him to use a hundred guinea-pigs for one experiment alone. Perhaps only one, or even two, reacted, but that was sufficient to establish a definite point. Other workers using less material would fail to get the single positive result. If genius is an infinite capacity for taking pains, then Noguchi was truly a genius. His many achievements are well known. The cultivation of spirochætes of several kinds, his researches into yellow fever, vaccine virus, the Wassermann reaction, Oroya fever, Rocky Mountain fever, trachoma, are some of the subjects in which he has enriched medical knowledge and made his name a household word amongst scientists.

He was rather a shy, retiring man, and did not mix freely with the rest of the workers, but preferred the quiet of his own laboratory. He did not seek the many honours he attained, but loved science for its own sake. A keen thinker, a hard worker, a great scientist, his loss will be mourned by those who knew him, not only as a scientist but as a friend.

I am, Sir, yours faithfully,

J. E. MCCARTNEY.

Southern Group Laboratory, Metropolitan Asylums Board, May 25th, 1928.

THE SOCIAL FACTOR IN ACUTE RHEUMATISM.

To the Editor of THE LANCET.

SIR,—The search for what may be called the social factor in the ætiology of acute rheumatism has not, so far, proved very fruitful; possibly, I think, because it seems to have been assumed that such a factor must have to do with external environment. The line of thought followed seems to be this: "Rheumatism attacks the poor and not the rich, it must, therefore, have something to do with poverty and its accompaniments or with the places in which the poor live." The soil, site, houses, and rooms where the rheumatic children live are therefore carefully studied and compared with the dwelling places of the non-rheumatic, but except for rather slender evidence implicating dampness, it will scarcely be said that any convincing environmental cause has been found. Dr. McSweeney's studies in Cardiff (THE LANCET, May 12th, 1928, p. 959), in particular, cast doubt on most of the suggestions hitherto made. The fact of the class-incidence of the disease remains, and its cause must be ascertainable.

Is it not possible to base an alternative argument on this admitted fact, running somewhat as follows? The children of the educated classes remain free from acute rheumatism whether they live on clay or gravel soil, in river valleys or on the hill tops, at home or in the boarding-houses of their public schools. This freedom is also shared by young people whose way of life is regulated by the educated—the inmates of orphanages instanced by Dr. R. Miller, and, most notably, the young soldiers in the war, when thousands of lads of 18 lived for months together in flooded trenches, dripping dug-outs, damp, dark cellars, and sodden camps with a very low incidence of rheumatism. In over three years of regimental and field ambulance work in France I cannot recall one typical case. "Trench fever," "trench nephritis," and "trench foot" we knew, but not "trench rheumatism." It hardly seemed possibly that after that vast experiment in the effects of damp and exposure the dampness theory could ever lift its head again. Thus the children of the educated and those under their protection and control have immunity; the disease falls, indisputably, on the less educated classes, but is said to spare, to some extent, the extremely poor.

If these facts are true, is it not at least possible that the differentiating social factor is to be found not in environment but in differing hygienic beliefs and habits? The rheumatic class, for example, clothes its children far more closely and warmly than the immune class; it is notably afraid of cold air, of "overheating"—i.e., strenuous exercise—and of underfeeding, while it views lightly the perils of carious teeth and infected tonsils. Is it not possible that the elusive social factor might be found by turning from environment to personal hygiene and investigating the amount of clothing worn, the quantity of daily food and of daily exercise enjoyed, and the room temperatures maintained by typical families of the immune and the susceptible social classes? I am, Sir, yours faithfully,

Hampstead, May 24th, 1928. LINDSEY W. BATTEN.

MEDICAL WORK IN YUGOSLAVIA.

To the Editor of THE LANCET.

SIR,—The article on medical work in Yugoslavia in your issue of May 5th describes admirably the astonishing efficiency with which Serbia is tackling questions of health. I have just returned from a week in the Hygienski Savod at Skoplje. Malaria and other tropical diseases are its chief care, and it is an excellent example of an institute of public health, beautifully equipped and organised and functioning magnificently. The institute is the central station for south Serbia, and work is carried on at some thirty subsidiary stations; medical attention is given in

the villages, anti-malaria work is directed, and there are even bath houses in many places where school children are washed compulsorily once a week—albeit that at first this sometimes needed the assistance of the gendarmarie. That such perfection is possible in the Balkans must be seen to be believed.

We were treated with the greatest possible kindness—in five languages— by the director, Dr. Rankov and his assistants, who were willing to give unlimited time and trouble in showing their work to foreign visitors. It is a remarkably good centre for studying some of the problems of malaria. Why, for instance, should blackwater fever be unknown in the Skoplje area, while here in Greek Macedonia as many as 36 cases were reported for last year in the hospital of Nea Moudania alone?

To anyone interested in research, or in the medical organisation of a "new" country, the institute at Skoplje is a veritable happy hunting ground.

I am, Sir, yours faithfully,

CICELY D. WILLIAMS, M.B. Oxf.

Society of Friends, Salonika, May 10th, 1928.

SOUND DEADENED ROOMS IN THE TREATMENT OF AURAL INFLAMMATIONS.

To the Editor of THE LANCET.

SIR,—When we give consideration to the damage of the internal ear from the influence of constant noise as seen in certain occupations where noise is concomitant, we realise that the ear has not received the protection that has been given to other organs by functional rest, especially during inflammation. The stomach is rested by a careful diet. The heart is helped by interdiction of the strain of exercise. The eye is kept shaded or in a dark room or its active function is minimised by atropine. An injured joint is mobilised. I might cite many examples where functional rest is considered a sine qua non of treatment in inflammation. No one has ever considered that the ear should receive the same care. Middle-ear inflammations are allowed to pass through their course without any thought that they are prejudiced by the environmental clamour. The sequels of chronicity and mastoid involvement are almost accepted as ineluctable; we consider that we have done our best for conservation when we have opened the drum and used isotonic or antiseptic irrigations with appropriate therapy to the nasopharynx and the nose. A striking fact in the effect of noise on the internal ear is that only the tones that reach the internal ear through the oval window cause this degenerative change. Does it not seem reasonable that the functional activity of the middle ear may aggravate congestion and increase the potentiality of the aural sequelæ? We see so often aural inflammations which are beginning to show operative necessity resolve completely when hospitalised; how much more benefit would accrue to this partial rest by a more or less complete functional rest? The influence of silence on the course of laryngeal affections has been demonstrated and appreciated.

The ear stands alone of all the organs in that it gets no real rest during the 24 hours. The ossicles and drum membrane are receiving all sounds and transmitting them even in sleep. That we do not perceive all the sounds is due to the sleep of the higher centres resulting in a lack of attention. How much influence may over-function have in starting up the peculiar degeneration of the ear in otosclerosis? Why does the spongifying osteitis start around the place of greatest functional activity—the oval window? We may give due credit to the influence of endocrine dysfunction, to hereditary dyscrasy, to changes in calcium content or to other theories of this insidious, progressive, and incurable deafness, but we cannot explain why it begins at the foot plate of the stapes, the place of greatest functional activity of the ear. Senile deafness, appearing more early in life and before senescence of other special organs, is due to the overstimulation of our modern environment. The clamant need, apparently, is rest. Physicists are experimenting in sound-proof rooms for the use of testing apparatuses to determine acoustic acuity.

No attempt has been made to gauge the benefit of functional rest in middle-ear inflammations; this has never been considered as a part of the treatment and has not been deemed necessary. Is it not possible that the continuous onslaught of sound would by conduction vibrations keep up or aggravate congestion? No differential trial has been made to determine the reaction of the inflamed ear under the ordinary environment and the reaction under functional rest. The majority of patients with middle-ear inflammations are ambulatory partly from custom, partly because it is easier for the patient to come to the doctor than it is for the doctor to carry around his apparatuses. Naturally the patient feels that his condition is not one that requires either local or somatic rest. There is a great deal of difference in the treatment of the ear and the meticulous care of the eye. Why?

It may be impracticable to suggest sound-proof rooms for aural inflammations, and of course it would necessitate a great change in hospitals to have sound-proof rooms. If that radical measure may not have a utilitarian appeal, at least the endeavour to lessen sound for the treatment of aural cases would be of decided benefit. I believe also that the onset of senile deafness would be slowed by occasional rest from noise—a rest that may be partially gained by wearing occlusive plugs occasionally. I make the suggestion, therefore, that sound-deadened rooms should be used for aural inflammations and that the majority of acute ear infections should not be allowed to be ambulatory, but should at least be semi-hospitalised in a quiet room. I venture to assert if hospitals would furnish sound-deadened rooms for the treatment of aural cases we might see fewer sequelæ which at present are a reproach to aural surgery and there would be instituted a distinct advance in preventive medicine.

I am, Sir, yours faithfully,

GEORGE B. MCAULIFFE.

26, West 87th-street, New York City, April 21st, 1928.

MEDICO-LEGAL RESEARCH.

To the Editor of THE LANCET.

SIR,—In your leading article on Status Lymphaticus (THE LANCET, May 26, p. 1078) you deplore the absence of a central institution in London where all medico-legal work could be concentrated in the hands of experienced pathologists to solve this and similar problems. One such problem is the constant occurrence of suicide attributed to ridiculously inadequate reasons. The oft-told story of "recent pains in the head and strangeness of manner" usually ends with a verdict of temporary insanity, with no attempt to discover by expert investigation the essential disease leading to such disaster. New light on the pathogenesis of such cases would help to prevent some of these calamities.

One would like to feel there is a likelihood of your important suggestion leading to some such central institute being organised.

I am, Sir, yours faithfully,

PATRICK WATSON-WILLIAMS.

Bristol, May 27th, 1928.

RHAZES AND AVICENNA.

To the Editor of THE LANCET.

SIR,—The eloquent and learned Linacre Lecture by Sir George Newman published in your issue of May 12th, cannot but have given great pleasure to all who heard it or have read it. I hope, however, he will allow me to offer an amplification of the sentence, in which he numbers Rhazes and Avicenna among the Arab physicians. It is true that they practised Arabian medicine, visited Bagdad, and wrote in Arabic, the scientific language of their day, but they were both Persians and were, as Sir George himself makes clear, original thinkers as well. Rhazes was

born, and lived, at Ray, and the Arabs therefore called him Ar-Razi, just as to-day we often add the name of his city, university, or hospital, to that of some particular worker. Now Ray was built, perhaps, 3,000 years ago, is one of the oldest of Persian cities, and its ruins are plain to see six miles from the modern capital, Tehran. Rhazes is the mediæval European form of Razi.

As to Avicenna, it is true that he was born near Bokhara, but his father was a Persian, and, at about the age of thirty, he himself moved into Persia and lived there for the rest of his life, chiefly at Ray and Hamadan, where he died and was buried (1037). His tomb is on the outskirts of the city, in a good state of preservation. A few years ago certain needed repairs were done by the local doctors and their friends. Need more be said of his fame than that he is quoted to-day by Persian physicians?

Persia may well claim Avicenna and Rhazes as two of her most illustrious men.

I am, Sir, yours faithfully,

London, May 23rd, 1928. A. R. NELIGAN, M.D.

RADIUM TREATMENT OF CANCER.

To the Editor of THE LANCET.

SIR,—In your issue of May 26th (p. 1101) appears the following report of a speech made by Dr. Vernon Davies in the House of Commons:—

"He (Dr. Davies) wanted to impress upon the committee and upon the country that the only safe thing for cancer was early and complete operation. Unfortunately it occasionally happened that they got cases which were late and inoperable, and then perhaps radium treatment might prolong the life of the patient, or perhaps give him a little more ease; but whatever they did they should not get into their heads the idea that radium would cure cancer; it could not do it at the present time. It was only a help, and he was afraid that the rather hopeful tone of the Minister of Health might create a wrong impression in the country and prevent some of those poor people from seeking medical advice in the early stages when something could be done."

This extraordinary misstatement is surely calculated to create a great deal of harm. It seems to be hard enough for many of our British surgeons to realise completely the present-day success of radium treatment, when properly applied to some of the carcinomatous diseases in certain situations where operative surgery is quite impossible, apart from many cases where there might be a choice between operation with removal of a large portion of tissue, and radium with its selective action, microscopically, on individual cells. Thousands of cases have been successfully treated in Great Britain, in certain centres where its action has been properly studied, and in other countries State assistance has been most effectually granted, and the clinics have published for a number of years results indicating complete success, with no recurrence after a lapse of five years, in addition to many thousands of "relative" cures, where the immediate effect, without symptoms, is noted under the period of five years.

No one has had greater experience of operative surgery than Howard Kelly, of Johns Hopkins University, who says:—

"It is generally agreed among the leading lights that present-day gynæcology is certainly both medical and surgical, and that radium has possibilities that the general rank of the profession fails to grasp."

In your own columns recently there have been a number of most encouraging articles, summed up in moderate and chastened language in a leading article on May 12th. Surely in this year of grace it would be much more helpful and hopeful to all sufferers from carcinoma if these could be induced to come forward at the earliest moment with a hope of painless cure by short-wave radiations? I should like to make only one more quotation, and that from Manchester:—

"Undoubtedly one of the greatest obstacles to the successful treatment of malignant disease is the fact that the patient—of the hospital class, at any rate—dreads an operation. If, as the result of further experience of radium treatment in this particular situation, it can be shown that there is an appreciable chance of a cure with but little risk to the patient, and if in addition he realises that no mutilation is involved, this type of patient will present himself at an earlier stage for treatment."

I am, Sir, yours faithfully,

SPENCER MORT, M.S., M.D.,
F.R.C.S., F.R.S. Edin.,
Lieut.-Colonel.

North Middlesex Hospital, Upper Edmonton, N.,
May 29th, 1928.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. A. W. North to be Surg. Comdr.
Surg. Lt. G. Kirker to be Surg. Lt.-Comdr.
Actg. Surg. Lts. (D) to be Surg. Lts. (D): W. Holgate, P. S. Turner, T. G. A'C. Emberson, and A. A. Gardner.

ROYAL ARMY MEDICAL CORPS.

Temp. Lt. D. W. Stuart relinquishes his commission.

ARMY RESERVE OF OFFICERS.

Lt.-Col. E. E. Ellery, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

SUPPLEMENTARY RESERVE OF OFFICERS.

Lts. C. W. Badger and C. C. H. Chavasse to be Capts.
J. N. Leitch to be Lt.

TERRITORIAL ARMY.

Capt. J. M. Chrystie to be Maj.
Lt. D. P. Levack to be Capt.
Lt. G. L. Pillans to be Capt.
General Hospitals: Lt. W. H. A. Dodd to be Capt.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions in the rank of Flying Officer for three years on the Active List: J. H. Cullinan, T. A. Edwards, A. R. French, P. J. Nyhan, and B. A. Porritt.

Flight Lt. (Hon. Squadron Leader) F. W. Squair relinquishes his temporary commission on completion of service and is permitted to retain the honorary rank of Squadron Leader.

INDIAN MEDICAL SERVICE.

Lts. Kaikhushroo Maneckji Bharucha and J. D. O'Neill to be Capts.
Temp. Lt. Des Raj Kajuria to be Temp. Capt.

DEATHS IN THE SERVICES.

Deputy Inspector General of Hospitals and Fleets, William Digby Longfield, R.N. (retired), who died on May 23rd at Plymouth in his ninetieth year, entered the Royal Navy in 1861 and served as assistant surgeon in the *Octavia* and *Spiteful* during the Abyssinian War of 1868 (medal). In 1875 he became staff surgeon and was in medical charge of the naval brigade with the sloop *Tenedos* which served in the Zulu War of 1879, and for some time was the only medical officer at the Lower Tugela. When senior medical officer with the Ekowe relief column, he was dangerously wounded at the Battle of Gingihlovo and was specially thanked and twice mentioned in despatches. He was also awarded the Zulu medal and clasp and promoted fleet surgeon. In the same year, 1879, he gained the Gilbert Blain gold medal for the best medical journal. After a commission in the troopship *Himalaya* in 1891 he was appointed fleet surgeon and retired as deputy inspector-general in 1893. He held the Greenwich Hospital pension for good service on the active list.

QUEEN'S HOSPITAL FOR CHILDREN.—The Duke of York, who presided recently at the annual meeting of the governors of this hospital, explained that although £100,000 was being appealed for to enlarge the buildings, it was intended to do the work gradually as means became available. The endowment income amounts to 5 per cent. of the expenditure and parents' contributions supply a further 15 per cent. The weekly cost per patient has been reduced from £4 0*s.* 7*d.* in 1926 to £3 16*s.* 1*d.* in 1927.

GENERAL MEDICAL COUNCIL.

SUMMER SESSION, 1928.

PENAL CASES.

TUESDAY, MAY 22ND.

IN accordance with custom, the Council heard the cases in public, and deliberated on their findings in camera.

Reported by the Dental Board of the United Kingdom.

The Case of Alfred Catlow, registered as of 16, Westgate, Burnley, "Dentist, 1921," and charged with fraudulently obtaining £1 each from two club patients for work on dentures which he had not performed. Mr. Catlow did not appear, and was not represented by a legal adviser. The Council directed that his name be erased.

The Case of Laurent Eugene Deprimoz, registered as of 89, Whitehorse-road, Croydon, "Dentist, 1921," and charged with abusing his professional position by committing adultery with a married woman. The respondent was represented by Mr. F. de Ferrars, instructed by Mr. F. Gowen. In the divorce proceedings between the lady and her husband professional relationship was not material and had not been mentioned. In a statutory declaration given during the inquiry Mrs. Dora Hoyle, a probation officer, had stated that the lady and Mr. Deprimoz had both told her that their first meeting had been a professional one. Mr. Deprimoz, however, had testified that he had known the lady before her marriage, and that he had never treated her professionally except to make her one denture as a gift in the early days of their liaison. He had never had immoral relations with her at his surgery. The Board had also heard the evidence of Mr. Charles David Levick in support of the respondent's testimony. The Council, after hearing the legal representatives on both sides, decided to erase his name from the Register.

The Case of Harry Patrick Jones, registered as of 4, Aberford-road, Woodlesford, Yorks, "Dentist, 1921." Mr. Jones had been reported by the Board for canvassing for patients through an approved society. The Council decided to postpone judgment for one year, subject to the usual conditions.

WEDNESDAY, MAY 23RD.

The Cases of (1) *Percy Bateman*, registered as of 423, New Cross-road, S.E. 14, L.R.C.P. Edin., 1906, L.R.C.S. Edin. 1906, L.F.P.S. Glasg. 1906 (adjourned from May, 1926). (2) *Duncan Miller*, registered as of Glebe House, Washington, Co. Durham, M.B., Ch.B. 1911, U.Aberd. (adjourned from May, 1927); and (3) *Robert Moore*, registered as of 34, Mawney-road, Romford, M.B., Ch.B., M.D. 1905 (adjourned from November, 1927) were considered by the Council. These three practitioners had previously been before the Council on charges involving drunkenness, and judgment had been suspended. It was decided to allow all three names to remain on the Register.

The Case of Frederick Joseph William Porter, D.S.O., registered as of the Army Medical Service, L.S.A. Lond. 1889, M.R.C.S. Eng., L.R.C.P. Lond. 1890. Major Porter had appeared before the Council for promoting his professional advantage by means of notices in the Indian press; the Council had found the facts proved and had suspended judgment for a year. On hearing his assurances for the future it was decided that his name should remain on the Register.

A False Statutory Declaration.

The Case of Dorothy Cochrane Logan, registered as of 4, Cavendish-place, W. 1, M.B., B.S. Lond. 1912, M.D. 1915, who appeared before the Council on the following charge:—

"That you were, on Nov. 7th, 1927, at the Mansion House Justice Room in the City of London, convicted of the following misdemeanour—viz., of knowingly and wilfully making certain statements false in material particulars in a statutory declaration made and declared by you on Oct. 12th, 1927, under and by virtue of the Statutory Declarations Act, 1835, and were fined £100 and ordered to pay £10 10s. costs."

Dr. Logan conducted her own case. In setting out the facts brought forward by the prosecution, the Council's solicitor stated that respondent had desired to draw public attention to the imperfect conditions under which Channel swimming was supervised. She had accordingly entered for the prize of £1000 offered by the *News of the World*, and had determined, if she should not actually succeed in swimming the Channel, to claim that she had and to secure the prize, afterwards returning it and publishing the facts. She had entered the water at Cape Griz-Nez on Oct. 10th, leaving it some two hours afterwards and crossing on the boat that accompanied her, and swimming to shore at Folkestone. On landing she had informed the newspaper concerned by telephone, and next day had signed in the editor's office a statutory declaration, under the Act of 1835, that she had swum the Channel. She had subsequently admitted the falsity of this declaration, and had been fined as set forth in the charge. Mr. Harold Watson, commissioner for oaths, and Mr. George Atkins, his clerk, admitted that no special attention had been drawn in the newspaper office to the fact that the document respondent signed was a legal one. Mr. Watson had not been introduced as a solicitor nor commissioner for oaths.

Dr. Logan, in her evidence and her address, gave the following account of the episode.

She was very sea-sick on the journey across the Channel, and when she arrived off Folkestone on the morning of Oct. 11th, her friend said she was too ill to travel to town. She did, however, drive up, and arrived at the newspaper office still dazed. She found the editor and proprietor present, and was handed a simple typewritten sheet, with a request that she would sign it. She said "Is it all right? This looks a bit solemn; I have no opportunity of consulting my lawyers," and was told it was a mere formality between the newspaper and their insurance office, and that she incurred no responsibility by signing it. Only after she had signed the paper did Mr. Watson step forward, and she then began to fear that she had signed something important, but it was too late to withdraw. She regarded signing the paper as an incident in the part she was acting for a serious purpose. She had no idea whatever that the document had legal significance until she received it back stamped a few days later. When charged at the Mansion House she was unable to bring forward as witnesses those who had been present at the newspaper office; and she therefore pleaded guilty on legal advice. The cheque did not remain in her possession but was put in the custody of her bank, to pay the *News of the World* on demand. The prosecution had never sought to impugn her personal character, nor to suggest that the offence was more than a technical one.

Dr. Logan said she was sorry she had "been such an idiot," but she had never before had occasion to sign a statutory declaration, and had firmly believed that to do so it was necessary to go before a magistrate in court and take an oath.

Mr. Horace Carey corroborated Dr. Logan's statement.

The President said that the Council had also taken account of the explanations given by way of mitigation of the gravity of the conviction, which was a serious one under the Perjury Act, and they had formed the opinion that Dr. Logan had not thoroughly realised her responsibility as a citizen and as a member of an honorable profession to refrain from signing any statement for the truth of which she could not vouch. They believe that her conduct henceforth would be worthy of the profession of which she was a member and had decided not to erase her name from the Medical Register.

THURSDAY, MAY 24TH.

The Case of Harry Simpson Harling, registered as of 102, Skipton-road, Ilkley, L.R.C.P. Edin. 1909, L.R.C.S. Edin. 1909, L.F.P.S. Glasg. 1909, who appeared before the Council on the following charge:—

"That, being a registered medical practitioner, you abused your position by committing adultery with Mrs.

Annie Belton, a married woman, with whose family you stood in professional relationship, of which adultery you were found guilty by the decree of the Probate, Divorce, and Admiralty Division (Divorce) of the High Court of Justice, dated Feb. 16th, 1927, and made absolute on August 31st, 1927, in the case of Belton *v.* Belton and Harling, in which you were the co-respondent. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

This case had been adjourned from the last session at the request of the respondent. There was no complainant. The Council's solicitor stated that respondent had come to Gainsborough in 1914 and had met Mrs. Belton, then Miss Skepper, for the first time in 1916. She had married Mr. Belton in 1919. In September, 1920, respondent had secured a deed of separation from his wife, and the marriage had later been annulled. In 1922 he had begun to attend the Belton family professionally, and in February, 1926, he had attended the youngest boy for an illness. The last day of the attendance had been on Feb. 23rd. On March 18th he had, unknown to Mr. Belton, entertained Mrs. Belton and her sister at supper. Next day he had gone to Lincoln with Mrs. Belton; Mr. Belton had quarrelled with his wife about this incident, and respondent had visited them, as he said in his statutory declaration, to try to settle their differences. Next day Mr. Belton had asked for his account, and on March 31st the Beltons had entered into a deed of separation. On April 20th respondent had sued Mr. Belton for the amount of his bill. In the beginning of May respondent had had influenza, and Mrs. Belton had nursed him; subsequently she had gone to live with him, taking her son and her sister. Respondent urged that he had not committed adultery until long after the professional relationship had been dissolved by his action in the county court, and that his wife and her solicitors had treated him without mercy. Miss Skepper, Mrs. Belton's sister, testified that Mr. Belton had several times made improper advances to her and had offered her money to commit adultery with him. Mr. and Mrs. Belton had been very unhappy together. After deliberation, the Council decided that Dr. Harling had committed infamous conduct in a professional respect, and directed that his name be erased from the Register.

FRIDAY, MAY 25TH.

An Improper Friendship.

Harold Foster Strickland, registered as of 47, Wickham-road, Beckenham, M. 1905, F. 1912, R.C.S. Eng., L.R.C.P. Lond. 1905, appeared before the Council on the following charge:—

"That, being a registered medical practitioner in professional relationship with a married woman, one Mrs. A. B. C., and her family, you abused such position by entering into and, notwithstanding expostulations by Mr. D. E. C., her husband, persisting unknown to him in maintaining a friendship with the said Mrs. C. of an improper character. And that in relation to these facts so alleged you have been guilty of infamous conduct in a professional respect."

Mr. Strickland was represented by Mr. Neilson, instructed by Messrs. Hempsons on behalf of the Medical Defence Union. The complainant, who was referred to throughout the proceedings as Mr. C., was represented by Mr. Carthew, instructed by Messrs. Le Brasseur and Oakley. The facts alleged were that the complainant's family physician had taken respondent as his partner in 1913. Respondent had performed a few minor operations, but the older physician had retained charge of the family until 1924, when Mrs. C. had been confined in his absence and Dr. Strickland had attended; from that time onward respondent had been their sole medical attendant. Social intercourse had begun between the two families about the year 1926, and had been fairly close. In May, 1927, respondent had written to Mr. C. concelling numerous engagements for what he had said was a very private reason. The reason had been an estrangement between respondent and his wife. After that period respondent had visited the house frequently in both a professional and a social capacity without his wife. In August Dr. Strickland had visited the C.'s who were on holiday at Seaview. Later in the year Mr. C. had begun to feel anxious at the friendship that was springing up between respondent and Mrs. C. As a result of a consultation with his father-in-law, he had approached Dr. Strickland; respondent had answered that he was glad Mr. C. had been frank, that the way to show the world that there was nothing the matter was to allow his wife and respondent to proceed exactly as heretofore. The same day respondent had had a heated conversation with Mr. C.'s father-in-law, and had been shown the door; he reported this episode to Mr. C., reiterating the advisability of his allowing the friendship to continue. A few days later Mr. C. had found his wife and respondent at the house of an acquaintance, Mrs. B., and had had another conversation with him which had followed similar lines. On Dec. 24th Mrs. C. and Mrs. B. had gone out motoring, Mr. C. remaining at home. Mr. C. had followed them on a bicycle and found them with respondent in the car. That evening Mr. C., after a long conversation with his wife, had written to respondent in most abusive terms, forbidding him to hold any further communication with his wife. When Mrs. C. was in Switzerland for a holiday in January, Mr. C. had come across a letter from the respondent addressed to her, containing expressions of the most unrestrained affection. Adultery was not alleged.

Mr. C. gave evidence proving these statements; in answer to a question by the Legal Assessor, he said that Dr. Strickland had ceased to be his family physician from Christmas in 1927, the time of the letter complainant wrote to him.

Respondent, in evidence, said that he had first met Mrs. C. at her mother's house, and had subsequently become acquainted with her brother and sister. He had met Mrs. C. socially, as she had lived next door to his partner. Beyond surgical treatment to an abscess for which his partner had treated her in 1916, he had had no professional relations with her. The fact that the children of the two households attended the same schools had been the foundation of the friendship between the two families. Respondent had attended Mrs. C.'s confinement in the absence of his partner, but had left as soon as the baby had been born. The close terms on which the two families met in 1926 had owed nothing to his profession. He denied ever having met Mrs. C. clandestinely. He did not deny feeling very strong affection for her, but he had never committed any misconduct with her in the sense that was known to the law. Her father, so far from kicking him out of the house, had shaken hands with him. The events of Christmas, 1927, had been as follows: Mr. and Mrs. C. and a friend had come in a car to deliver presents at his nursing-home, where the friend's mother had died. He had asked the C.'s in, but Mr. C. had pleaded a long round of visits. As he had reached his own home an hour later the two ladies had arrived in the car. It was raining, and he had got into the car with them and they had driven round the neighbouring streets and parted soon afterwards. The meeting had been entirely unarranged. When he had been staying with the C.'s at Seaview Mrs. C. had just recovered from tonsillitis; she had disliked her gargle and he had prescribed another for her, and a tonic. This had been purely a friendly act, not professional attendance.

Cross-examined, he admitted having corresponded with Mrs. C. when she was in Switzerland, but said he had not done so nor seen her, except with solicitors, since she had returned. He denied having ever seen her alone or clandestinely, but admitted that friends in whose houses they had met, knowing their affection for one another, had left them alone for periods of a few minutes. In answer to the President, he admitted that his patients had all been patients of the partnership. Asked whether at Seaview he had prescribed for Mrs. C. as her doctor, he answered "No, as her friend."

The President: "You prescribed, then, for another man's patient?"—"No, the local man had finished his attendance." Asked about the estrangement between himself and his wife, he alleged that the relationship had been perfectly normal for 14 years, and that the estrangement had taken place because he had arranged to go to a poker-party with the C.'s in London, and she had not been invited. In answer to a question from the President as to whether his relation with Mrs. C. was the cause of his estrangement from his wife, respondent said that the latter said he had not been playing poker, but had been motoring Mrs. C. about London. Dr. Strickland said he had written the letter because he was in love with Mrs. C. He had written one such letter previously, and had used expressions of the kind when he had been with her. It would, however, be unfair to say that the expressions in the letter were the culmination of these short interviews with her in the houses of mutual friends.

Sir Herbert Waterhouse bore testimony to respondent's character as straightforward, honest, and trustworthy, a brilliant surgeon, and a most successful practitioner. He admitted that the letter had amazed him, and he did not think that respondent would have written it at the present time, but that he must have been overwrought and abnormal when he wrote it.

Counsel for the respondent argued that the professional relationship had been quite subsidiary and incidental to the affection of respondent for Mrs. C. He quoted Lord Esher's dictum that, in order to fall within the scope of the definition, "infamous conduct in a professional respect," a medical man must be acting in pursuit of his profession in doing the acts alleged against him. This relationship did not come into that category; there was no "professional respect." He submitted that when the treatment for a certain complaint was over, the relationship of doctor to patient ceased, subject to the payment of the fee. A man could not help becoming fond of a woman, and Dr. Strickland had committed no misconduct. His actions might have been unwise, but they had not been disgraceful or dishonourable.

The Council found the facts proved, and that they amounted to infamous conduct in a professional respect, and directed that Dr. Strickland's name be erased from the Register.

The Case of Kenneth Albert Wilson, registered as of 8, Wharncliff-street, Scotswood-road, Newcastle-on-Tyne, L.R.C.P. Edin. 1921, L.R.C.S. Edin. 1921, L.R.F.P.S. Glasg. 1921, who had been summoned to appear before the Council on the following charge:—

"That you were, on March 20th, 1928, at the Central Criminal Court, convicted of the following felony—namely, of using an instrument to procure miscarriage, and were sentenced to 18 months' imprisonment in the Second Division."

Dr. Wilson's legal adviser produced no evidence. The Council directed that his name be erased.

A Charge of Canvassing Dismissed.

The Case of George Howard Shanley, registered as of 30, Croxdale-terrace, Pelaw-on-Tyne, L.M.S.S.A. 1925. Charges 1 to 8 dealt with certain persons mentioned by name, and were headed:—

"That, being a registered medical practitioner, you have sought to attract to yourself patients either directly or by an agent, and in particular the following persons."

The ninth charge was as follows:—

"That in April, 1927, whilst addressing the Wardley Lodge Meeting of the Durham Miners' Association held in the Miners' Hall, Wardley, you invited the persons present to become your patients."

Respondent was unrepresented.

The complainants were the London and Counties Medical Protection Society. Mr. Carthew, their counsel, stated that respondent had come to Pelaw-on-Tyne, in Durham, and started to practise in March, 1927. There had been two doctors already in the town, Dr. A. B. Stich and Dr. M. L. Thomson, who were partners. On April 3rd these practitioners had written to their society and to the respondent, commenting on the fact that he had not called on them and complaining that a person had been canvassing on his behalf, asking the residents of Pelaw to join respondent's panel or become his patients or members of his sixpenny club; they had threatened him with proceedings before the Council if they heard of any further canvassing after April 5th. Dr. Shanley had replied that anything of the kind had been done without his knowledge through, possibly, the mistaken zeal of a well-wisher, and that a more manly and straightforward action would have been to approach respondent before invoking the aid of the society. On April 10th Dr. Shanley had attended a meeting of the Durham Miners' Lodge at Wadsley. The local secretary had announced that Dr. Shanley wished to address the meeting. Dr. Shanley had then said that he had come into the neighbourhood to build up a practice; he thought the district was big enough to give another doctor a good living, and if anyone wished to become one of his patients he could do so by leaving his name at his call-house, No. 1, Third-street. He also thought it was essential that there should be a colliery doctor to fight compensation cases, and he was not there to run down Dr. Stich and Dr. Thomson. As he was going out he had said that anyone who wanted to change his panel could do so by merely filling up a form or leaving his name and address at the call-house. He had added that many persons had the idea that they must wait six months before changing, but that it could be done at any time. Counsel did not put in the statutory declarations of his witnesses.

Evidence supporting the charges was given by two miners, Charles Dickson and Joseph Ball.

Dr. Shanley, giving evidence on his own behalf, stated that he had been asked to address the lodge meeting by the secretary, from whom he could produce an official letter. Other doctors had been given this privilege on coming to the district. The secretary had told him that there was an impression among the men that, as Dr. Stich and Dr. Thomson were compensation doctors for the colliery, no other doctor could treat compensation cases; he had asked respondent to explain the position of the men towards compensation and the changing of their panel doctors. On being introduced by the chairman, respondent had said: "If you think for one moment that I have come here to discredit or attempt to injure any other doctor, especially Dr. Stich and Dr. Thomson, you are mistaken. I have come to try and make a practice." He had then explained compensation and the method of changing panel doctors in general terms only. The rules for the transfer of panel patients had, he said, been changed five times in the last two years; confusion arose from the discrepancies in the instructions printed on the backs of the cards. He gave another version of the incident related by Ball, and denied the charge of canvassing. Dr. Shanley stated that to his great regret he had been unable to afford to bring witnesses. He put in statutory declarations which testified that he had spoken in very fair terms of Dr. Stich and Dr. Thomson, and had explained compensation and the method of changing panel doctors. He had not invited men to come on his panel. His words had been, "When a man wishes to change his doctor, it is not necessary to wait the time stated on the back of the card."

The finding of the Council was as follows: "The charges under heads 5 and 9 have not been proved to the satisfaction of the Council, and on the others no relevant evidence has been adduced. The case is therefore closed."

MATERNITY HOSPITAL FOR BELFAST.—At a meeting held at Belfast on May 16th, in furtherance of a scheme to build a maternity hospital in connexion with the Royal Victoria Hospital, subscriptions amounting to £15,000 were announced.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MAY 23RD.

NATIONAL HEALTH INSURANCE BILL.

THE House considered the National Health Insurance Bill on Report.

Mr. CHAMBERLAIN, Minister of Health, moved the second reading of a new clause to amend Section 94 of the principal Act as to special orders. He explained that Clause 19 of the present Bill brought within the purview of the National Health Insurance scheme certain new classes of persons, but it was provided under the clause that by special order particular persons could be excluded from the general rules, those persons not being persons whom it was intended nor possible to insure. If the ordinary procedure were followed with regard to special orders it was very possible that the special order excluding them could not be brought into force until some time after they had been brought into the Act. The object of the new clause therefore was to make the special orders operative forthwith. This would avoid bringing people into insurance and making them pay contributions for a short time when they were going to be excluded from insurance before they would be able to get any benefit.

The clause was read a second time and added to the Bill.

On Clause 4 (Amendment of Section 26 of the principal Act as to subscriptions to charitable institutions),

Lieut.-Colonel FREMANTLE moved an amendment to enable subscriptions to be made by approved societies towards the support of district nurses. He said that if the amendment were left out societies might think that they were no longer allowed to make contributions for this purpose.

Dr. DRUMMOND SHIELS, in seconding the amendment, said that the district nursing associations did very good work, and it was most desirable that approved societies should have the power to contribute to their funds if they so desired.

Sir KINGSLEY WOOD accepted the amendment, which was agreed to.

On Clause 16 (Amendment of Section 75 of the principal Act as to disposal of surpluses),

Dr. VERNON DAVIES moved an amendment to include dispensaries among the charitable institutions to which subscriptions might be made from the disposable surpluses of the societies.

Sir KINGSLEY WOOD accepted the amendment, which was agreed to.

Sir KINGSLEY WOOD moved an amendment providing that a special order could be made to meet the case of share fishermen restricting the right of deducting or otherwise recovering the employer's contribution.

The amendment was agreed to.

Sir KINGSLEY WOOD moved an amendment postponing to Jan. 7th, 1929, the coming into operation of the part of the Bill which relates to deposit contributors who cannot find admission to approved societies because of the state of their health, and who are to be formed into a separate section. He explained that the Ministry had been advised to fix the commencement of the Act on Jan. 1st, 1929, save as regarded the persons dealt with in this amendment. That would give them adequate time to prepare a good many difficult regulations and to consult the various interests.

The amendment was agreed to.

The Report stage was concluded.

Third Reading of the Bill.

Mr. CHAMBERLAIN, in moving that the Bill be read the third time, said that they might congratulate themselves that the measure had had on the whole a very favourable reception and that it had been recognised that its provisions would result in considerable improvement in the administration of the National Health Insurance scheme. He thought that it would be admitted that under Clause 1 the scheme offered very generous and liberal treatment to insured persons who by reason of genuine unemployment had fallen into arrears with their contributions. They had also improved the position of the married woman who had been insured and who ceased to be employed on marriage. She would now have the full sickness benefit of 12*s.* instead of a reduced benefit of only 7*s.* 6*d.*, and there was no reduction in the maternity benefit. As a result of the discussion which had taken place on the question of additional benefits it was now clearly understood and agreed that there were certain kinds of benefits which were of the nature of medical benefits, but were really not suitable for administration by insurance committees, or even by the approved societies. They had to contemplate in future, particularly in the administration of clinics, some of which would be set up under this Bill, an arrangement under which there would be a joint representation of the professional men who were concerned in the carrying out of the service and the approved societies, and he hoped that under the Regulations made under the Bill they would be able to provide a more satisfactory administration of those benefits. An opportunity had been taken to insert in the Bill a definite statement which embodied the assurance he had given more than once as to the right of the insured person to a free choice of dentist or doctor. Under Clause 16 (3) there was a proviso which specifically stated that Regulations were not to restrict the right of any insured person to obtain treatment from any practitioner, clinic, or other institution with whom arrangements in respect to that form of treatment had been made in accordance with the Regulations. He believed that would receive general acceptance. He regretted that it had not been possible to include an arrangement by which a specialist service could be provided for insured persons. He held very strongly that that was the greatest improvement that could be made at this stage in the general scheme of national health insurance. He hoped that in course of time it might be possible to make arrangements under which they could ensure the provision of specialist advice, but the recommendation of the Royal Commission was accompanied by a proposal that the specialist service should be obtained by means of a pooling of surpluses. That was not a proposal which commended itself to the approved societies generally, and there was a considerable body of opinion in the House which supported the societies in their attitude. Therefore it was not possible to put it forward in this Bill. But they had perhaps made some little advance towards it by adding to the list of additional benefits in the First Schedule No. 16, which dealt with payments to approved charitable institutions where insured persons might get the benefit of specialist treatment, and as it had been represented that that was perhaps a little unfair to the private practitioner or private specialist who ought to be allowed to give treatment if approved societies desired them to do so they had made an addition to Paragraph 8 by which a service of that kind should not be within the ordinary scope of medical benefit.

Mr. RHYS DAVIES said that the Bill as it stood was only an instalment of what they ought to get, but the Labour Party were anxious that the Bill should be passed and they would not divide against the third reading.

The Medical Profession and a Statutory Right.

Dr. VERNON DAVIES congratulated the Minister of Health and his department on the success which had attended a Bill which had caused great satisfaction throughout the country. There was perhaps one section of the community who had viewed the Bill with certain suspicions and who were still not quite happy as to what might in future years be the result. He referred to the medical profession. Before the National Health Insurance scheme started there was a certain amount of friction and discussion between the approved societies and the medical men, and it was found necessary to include in the first Act certain statutory provisions concerning medical benefit. That statutory right had been retained by the medical profession up to the introduction of the present Bill. The Minister of Health had now withdrawn that statutory right and had given the profession the promise of Departmental Regulations instead. The medical profession, rightly or wrongly, felt that a statutory provision was of very much more value to them than any Departmental Regulation. He had tried to get that view accepted by the Standing Committee, but he had failed. The medical profession therefore viewed the measure with slight misgiving, although they had absolute confidence in the present Minister of Health. They recognised that he would hold the scales absolutely fairly between the medical profession and the approved societies, but the time might come when Mr. Chamberlain would no longer be the Minister of Health, and then the medical profession would be more or less in the hands of a gentleman who might hold different views. It was quite possible that a future Minister of Health might honestly and sincerely think that the proper way would be for the coöperative societies to start a clinic, either for eyes, ears, nose, or throat, and then appoint their own doctor. Under this Act such a minister would be empowered to make regulations to enable that to be done. If such an unfortunate course ever happened it would arouse again all that antagonism between the approved societies and the medical men which was so prevalent in 1911. That was a thing which the medical profession were particularly anxious to avoid. They were anxious that the National Health Insurance scheme should be a success, and that the insured persons should receive its full benefits. That could only be done by hearty coöperation between the approved societies, the medical profession, and the State, all working equally for the good of the insured population. They had to recognise that there had been difficulties, and he only hoped that the Minister by his action had not increased those difficulties;

but that he might be right in expecting that the present scheme would be a success, and that the suspicions of the medical profession had not been justified.

Specialist Services.

Dr. SHIELS said he quite agreed with what had been said as to the merits of the Bill as far as it went, but he thought they had a very reasonable complaint that it did not go far enough. As an expression of the recommendations, or as an application of the recommendations of the Royal Commission it was extremely inadequate. It was quite well known that the Royal Commission placed great importance on specialist services, and Mr. Chamberlain had indicated that he also placed the same value on them. It was true the approved societies were not enthusiastic about the proposal of the Royal Commission for providing specialist services; but if that was a right proposal why did the Minister of Health not seek to carry it out? Sir Walter Kinnear, who had control of the Insurance Section of the Ministry of Health, and who was a very great authority, emphasised two years ago that there was an urgent demand and a proved necessity for specialist and consultant services. Sir Walter Kinnear urged the importance and necessity of pooling as the Royal Commission suggested. While no doubt there had been great difficulties, he (Dr. Shiels) thought the Minister had been guilty of a lack of courage in not tackling this question. As long as these services were not provided the National Health Insurance scheme must be considered to be giving to the great mass of the population an incomplete and inadequate medical service. Attempts had been made in the Standing Committee to ensure that the wives of insured persons should have in confinement adequate midwifery services. The Minister of Health and the whole of his department were extremely sympathetic on this subject, and had in hand various schemes dealing with the matter. He understood that some effort was being made to achieve progress in this connexion. While the problem of maternal mortality was very complicated and difficult, everyone was agreed that one thing to be done was to provide adequate midwifery attendance at the time of confinement. It had always been the practice up to now that dental benefit, like other additional benefits, was not provided until five years' membership had elapsed. The result was that they had a very extraordinary position. They had a very inadequate school dental service through which a child could get dental treatment up to the age of 14, and then from the age of 14 to 16 and up to 21 years there were seven years before an effective method of dental service was provided. Dental service should be given early, because it saved a great deal of subsequent treatment. The unfortunate thing was that the present dental service for insured persons consisted almost entirely in taking out teeth and supplying dentures, instead of the service being, as it ought to be, that of stopping and making minor adjustment which would prevent these more serious things being required afterwards. Apart from economy in dental service such treatment would be an economy from the point of view of general health. He had made representations on that matter to the Minister, and he was glad to say that they were being favourably considered. If something could be done on these lines they would have very much greater satisfaction in this Bill, because there was a tendency to concentrate too much in the health insurance scheme on the financial side, and on the side of cash benefits, rather than on the provision of an efficient and comprehensive medical scheme for the insured person.

A Balanced Measure.

Lieut.-Colonel FREMANTLE said if they would look at the way in which the insurance funds were distributed they would find that the first seven of the new additional benefits were cash benefits. All the way through the cash benefits loomed infinitely larger than the benefits in kind.

Hon. Members: Why not?

Lieut.-Colonel FREMANTLE said that the reason was that this was a balanced measure for the improvement of the health of the people. It was balanced between two things—the need of giving financial relief at the time of distress, and the need of giving technical treatment for the cure, and still more for the prevention of the causes of that distress. It was that combined purpose which was the basis of the insurance scheme originally. If it ever led in other directions it was failing in its purpose. He feared that in the scheme now there was too much given in free cash distribution, and not enough in actual treatment. He particularly wanted to show how that applied to maternity. Statutory benefit was originally 30*s.* for maternity, and no professional attendance. That was increased to 40*s.* in maternity benefit and no treatment. It had been increased still more. It was commonly understood that the average was 46*s.* and no treatment. They knew that these people who received this money did not get the best treatment that could be provided, or such treatment as was intended. It was with regard to this question of the rearrangement of the cash benefits under the Bill that those who looked after the health of the community were concerned. They hoped that they might get more and more a professional and proper use made of the National Health Insurance funds, and it was in that hope that they welcomed this Bill as a steady step forward towards the improved health of the people.

The Bill was read a third time.

Board of Survey and Naval Invaliding Cases.

Mr. HORE-BELISHA asked the First Lord of the Admiralty in how many cases the commander-in-chief accepted the decision of the board of survey in invaliding cases in the last 12 months; and in how many cases he overruled the recommendations of the board of survey.—Lieut.-Colonel HEADLAM, Parliamentary Secretary to the Admiralty, replied: So far as I am aware the commanders-in-chief have accepted the decisions of the boards of survey in all cases of invaliding during the last 12 months.

Decrease in Birth-rate.

Mr. THURTLE asked the Minister of Health the average number of births per day for the first quarter of 1928; and whether this average figure represented an increase or a decrease on the corresponding figure for the first quarter of the preceding year.—Sir KINGSLEY WOOD replied: On the provisional figures at present available there were on an average 1847 births registered per day during the first three months of 1928. This figure represents a decrease on an average of eight births per day on the corresponding figure for the first three months of 1927.

Production of Government Lymph.

Mr. RENNIE SMITH asked the Minister of Health how many calves had been used during the past 12 months in connexion with the Government lymph factory at Hendon for the production of lymph.—Sir KINGSLEY WOOD replied: 421 calves were used at the Government lymph establishment for the production of lymph during the year ended March 31st last.

State Grants for Additional Insurance Benefits.

Mr. RHYS DAVIES asked the Minister of Health the amount of the State grant on each of the additional benefits paid by approved societies for the years 1925, 1926, and 1927 respectively.—Mr. CHAMBERLAIN replied: The approximate amount of the State grant on each of the non-cash additional benefits paid by approved societies in England and Wales for the years specified is as follows:—

Description of Benefit.	Amount of State grant.		
	1925.	1926.	1927.
	£	£	£
Dental	97,150	185,590	438,300
Ophthalmic	12,860	25,250	53,510
Hospitals	48,760	37,090	36,760
Convalescent Home Treatment	1,600	7,020	15,950
Surgical Appliances	3,090	5,490	9,520
Want or Distress	1,020	1,380	1,610
Nursing	1,380	1,150	730
Providing Convalescent Homes	1,540	1,570	720
Repayment of Contributions ..	1,620	2,080	2,200
Total	£169,020	£266,620	£559,300

As the cost of additional benefits which take the form of increases of ordinary cash benefits (sickness, disablement, and maternity) is not separately recorded, the amount of the State grant thereon cannot be stated.

THURSDAY, MAY 24TH.

Boards of Guardians and Vaccination.

Mr. LANSBURY asked the Minister of Health whether he was aware that an official medical man at Romford intimated to the guardians and press representatives that they would have to be vaccinated before attending a meeting of the board of guardians recently or undertake to remain in the institution 11 days; and whether such action was in accordance with the Ministry's regulations and orders under which boards of guardians carried on their duties.—Mr. CHAMBERLAIN replied: The hon. Member appears to have been misinformed. An intimation was given to the guardians that it would not be wise for them to visit the guardians institution, in which a case of small-pox had occurred, for the time being, and that it was advisable that guardians attending meetings of the board or committees should be vaccinated; but the notice to which reference has been made in the press was not in fact given. In these circumstances the latter part of the question does not arise.

Persons Entitled to Health Insurance Benefits.

Mr. DAY asked the Minister of Health the estimated number of persons entitled to benefits under the National Health Insurance Acts at Dec. 31st, 1927, or last convenient date, showing the number of men and women who were on the register of approved societies at that date.—Mr. CHAMBERLAIN replied: The number of persons entitled to benefits under the National Insurance Acts at Dec. 31st, 1927, in England and Wales was approximately 14,260,000, of whom 9,210,000 men and 4,620,000 women were on the registers of approved societies. These numbers are exclusive of persons over 70 years of age who ceased on or before Jan. 2nd, 1928, to be entitled to sickness and disablement benefits.

Nursery and Open-air Schools for Delicate Children.

Mr. HOLLINS asked the President of the Board of Education the number of local education authorities which had established nursery schools, open-air residential schools, open-air schools, and schools for mentally defective children, and the respective percentages to the total number of local education authorities, and whether he would consider the desirability of collaborating with the Minister of Health in coördinating the services in respect of mentally defective and delicate and tuberculous children.—Lord EUSTACE PERCY replied: The following is the information asked for. The table shows the number of local authorities who have established schools of the types mentioned:—

	Local authorities.	
	Number.	Percentage of total number.
Nursery schools	8	2·5
Residential open-air schools	10	3·1
Day open-air schools	41	12·9
Residential schools for mentally defective children	7	2·2
Day schools for mentally defective children	75	23·6

The figures for open-air schools relate only to schools for the education, under open-air conditions, of delicate and debilitated children suffering from non-infectious conditions, including open-air schools which provide medical treatment and care. In addition in a number of areas such as London and Manchester, classes more or less on open-air lines, attached to public elementary schools, have been started for young or delicate children. Residential schools for both mentally and physically defective children are, of course, attended by children from a considerable number of areas. The hon. Member will find details in the Official List (42) of Certified Special Schools. As regards the last part of the question arrangements for coördination in respect of the services referred to already exist between my department, the Ministry of Health, and the Board of Control.

Revision of Washington Hours Convention.

Sir NICHOLAS GRATTAN-DOYLE asked the Minister of Labour whether any statement would be made at the forthcoming meeting of the Governing Body or at the annual session of the International Labour Conference of the position of the Government in relation to the Washington Hours Convention.

Lord Henry CAVENDISH-BENTINCK asked the Minister of Labour whether the Government had drawn up its detailed proposals for the revision of the Washington Hours Convention; if so, whether those proposals had now been communicated to the International Labour Office; and if he would announce what these proposals were.—Mr. BETTERTON, Parliamentary Secretary to the Ministry of Labour, replied: Since I stated the position of the Government to the Governing Body in February, they have adopted a form of procedure for the revision of draft International Labour Conventions. At the meeting next week His Majesty's Government will press for the application of this procedure to the Washington Hours Convention at the earliest opportunity, and if that proposal is adopted they will be prepared in due course to announce in detail their views as to the form that revision should take.

Supply of Milk at Maternity and Child Welfare Centres.

Mr. MALONE asked the Minister of Health for what reason he had issued a circular to the maternity and child welfare centres instructing them that no milk was to be given to mothers and babies where the family was in receipt of poor-law relief; what was the amount spent on milk by the maternity centres throughout the country; and what was the total amount spent on the maternity and child welfare centres, both by way of grant from the Exchequer and by the local authorities; whether the guardians were authorised to spend money on milk for expectant and nursing mothers over and above relieving actual destitution; and whether he was aware that when the guardians made an allowance for milk they were obliged to allow the full retail price of milk, whereas the maternity centres were able to obtain milk for distribution under contract at a reduced price.—Mr. CHAMBERLAIN replied: No such circular has been issued, but I have suggested to certain of the maternity and child welfare authorities that they should reconsider their procedure in dealing with applications for milk and refer applicants who are in receipt of poor-law relief to the guardians, in order to avoid overlapping and waste. As regards the last two parts of the question, it is competent for the guardians in giving relief to decide, on the advice of their medical officer, whether any special need is present, and if so to take account of that need in determining the amount and form of relief. The guardians are in no worse position than a maternity and child welfare authority because they can also purchase milk by contract for distribution to those in receipt of relief.

Institutional Treatment of Tuberculous Children.

Mr. HOLLINS asked the Minister of Health the number of local governing bodies, and the percentage of the whole, which had made provision for the institutional treatment of tuberculous children and mentally deficient children; and whether the education of the children was continued during the time they were in the institution.—Mr. CHAMBERLAIN replied: All tuberculosis authorities include in their schemes for the treatment of tuberculosis provision for the institutional treatment of tuberculous children. Of the 125 local authorities under the Mental Deficiency Acts 21 have made direct provision of institutional accommodation for children, and others have made provision for the accommodation of children by contracting either with the managers of privately-owned institutions or with poor-law authorities. Education is provided for tuberculous children who make more than a brief stay in a sanatorium, and education and training suited to their capacity is in all cases provided for mentally deficient children while they are under care in an institution.

Use of Small-Pox Hospitals as Tuberculosis Sanatoriums.

Dr. VERNON DAVIES asked the Minister of Health if he would state how many small-pox hospitals in this country had during the last three years been used as sanatoriums for tuberculosis cases; in how many of these hospitals had the authorities had to discharge their cases of tuberculosis in order to admit cases of small-pox; was he aware that some of the tuberculosis cases had had to return to their homes as no sanatorium accommodation could be found for them; and what steps he proposed to take to deal with this situation.—Mr. CHAMBERLAIN replied: Twenty-one small-pox hospitals have been used during the past three years for the treatment of tuberculosis, in one case for the summer months only. Tuberculous patients have been removed from six of these hospitals in order to provide accommodation for small-pox cases. Of these six at least three will not again be used for the treatment of tuberculous patients, alternative accommodation having been provided or being in course of provision. I am aware that there is some disadvantage attaching to the use of small-pox hospitals for tuberculous patients, but when it is necessary for these hospitals to revert to their original use every effort is made to find other accommodation for the displaced patients. It is primarily a matter for the local authorities to consider what steps should be taken to avoid the possibility of some of these patients having to return to their homes.

Prescriptive Standard of Grade A Milk.

Mr. FENBY asked the Minister of Health if he was aware that it was possible in England and Wales for a producer of Grade A milk which was below the prescriptive standard required to continue to sell such milk without the local authority having power to withdraw the licence; whether he was aware that in Scotland, if such standard failed to reach the prescriptive standard required for the purposes of the Food and Drugs Act, the licence could be withdrawn; and if he would take steps so that the same powers should obtain in England.—Mr. CHAMBERLAIN replied: It is possible in the case of Grade A milk, as of other milk, for an unadulterated sample to fall below the presumptive limits laid down for the purposes of the Sale of Food and Drugs Acts, and in such cases a prosecution under those Acts can be undertaken by the local authority if the facts appear to justify that course. I see no reason for thinking that a power to withdraw a licence would be more effective in securing that Grade A milk is kept up to the presumptive standard.

Voluntary Societies and Slum Clearances.

Viscount SANDON asked the Minister of Health whether he was aware of, and could render any assistance to, the societies which had been organised in various parts of the country for the purpose of undertaking on a voluntary basis schemes for the improvement and clearance of slum areas and the provision of houses at low rentals.—Mr. CHAMBERLAIN replied: I am aware of the valuable work which is being undertaken by these societies. In connexion with their schemes for the erection of new houses it is open to the societies to apply to the local authorities for subsidy under

the Housing Acts of 1923 and 1924 in respect of houses which comply with the conditions laid down. I shall always be pleased to render any assistance possible towards furthering the objects of these societies.

Building on Site of Foundling Hospital.

Sir JAMES REMNANT asked the Minister of Health whether he was aware that the Foundling Estates, Limited, had submitted plans for building on the site of the Foundling Hospital, including a new road which would encroach on the Mecklenburgh and Brunswick garden squares; that the proposed road would cut through the garden enclosures of Caroline-place and Lansdowne-place; and that buildings on the north frontage of Guilford-street would involve the removal of large portions of these two garden enclosures; when he proposed to resume the public inquiry into the London County Council, Holborn and St. Pancras town-planning scheme, adjourned on Feb. 3rd, 1928; and would he exercise his powers to restrain the proposed encroachment upon the garden squares and the destruction of garden enclosures.—Mr. CHAMBERLAIN replied: I have not details of the submitted plans, but the approval of plans for building on the site of the Foundling Hospital rests with the London County Council, and I have no power to prohibit the approval. I have communicated with the London County Council on the town-planning proposals and the resumption of the inquiry depends on whether the Council decide to proceed with the town-planning scheme so far as it applies to the site of the Foundling Hospital.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

CITY OF LONDON.

Dr. W. M. Willoughby, who was appointed medical officer of health on May 17th, has been in charge of the department since Dr. W. J. Howarth's retirement and presents the annual report for 1927.

He states that among the small night population of the city, estimated at 13,010, there were 114 births (birth-rate 8·7) and 150 deaths (death-rate 11·5). Twelve deaths occurred among infants (infant mortality-rate 105), including one death from diarrhœa. The tuberculosis death-rate was 0·92; the cancer-rate 1·84; the respiratory rate, including two deaths from influenza, 1·4, and the rate from heart diseases 2·3. The single maternal death from childbirth was attributed to puerperal sepsis.

The density of the night population was estimated at 19·8 persons per acre, and of the day population, of persons actively engaged in the city, 644·1 per acre.

In view of the biennial epidemic of measles due at the end of 1927 and the beginning of 1928, a warning leaflet was issued through the teachers of the day schools and Sunday schools and the infant welfare centre. At the tuberculosis dispensary, established at St. Bartholomew's Hospital, more use was made of artificial pneumothorax, which was induced in 9 cases with 182 refills. Dr. Willoughby agrees with the city tuberculosis officer, Dr. F. H. Young, that for a large proportion of tuberculous patients employment in a factory especially devoted to them is the only solution. Dr. Willoughby also expresses his approval of the proposal to establish a permanent smoke prevention advisory committee for greater London. The figures given indicate that cremation is gradually gaining ground in this country, but not so rapidly as in Czecho-Slovakia, Scandinavia, Switzerland, and Germany.

Out of 41 milk samples biologically tested on guinea-pigs, 2 gave a positive result for tubercle. Milk samples found unsatisfactory on account of dirt content are reported to the medical officers of health of the districts concerned. Thirty samples of butter served with bread or scone were taken and successful proceedings were instituted in connexion with one sample certified to consist of margarine. Proceedings were also taken with regard to preservative powders used for sausages which were found to contain boric acid. In the case of a sample of margarine containing boric acid and of tinned peas containing sulphate of copper time was given for the disposal of old stock. Inspection showed that the regulations for the cleansing of empty milk churns was receiving satisfactory attention.

Importation and Inspection of Meat.

Interesting figures are given with regard to meat from the Board of Trade statistics. Thus, of 671,796 tons of imported beef 577,916 came from Argentina; of 276,845 tons of imported mutton 136,866 came from New Zealand; of 25,229 tons of pork 15,867 came from the Irish Free State; and of 423,456 tons of bacon 254,080 came from Denmark. The demand for chilled beef as against frozen increases; thus there was an increase of 36,000 tons of "chilled" and a decrease of 25,000 tons of "frozen." The importation of live cattle from South Africa, Canada, and the United States of America is disappearing. Thus the figures for 1927 were 629,001 from the Irish Free State, 7669 from Canada, and 198 from South Africa. This is partly due to the increasing demand and the high prices obtained for imported cattle in the U.S.A. It is suggested that if the U.S.A. opens its ports to chilled beef from South America there would be a rise in the price of Argentine meat at Smithfield which would act as an incentive to British and Irish farmers to produce more home-fed animals. In 1927 there was an increase from Britain and Ireland in the Smithfield returns of 9333 tons of beef and veal, 6722 tons of mutton and lamb, and 14,545 tons of pork and bacon. Much attention has been given to the supply of fresh pork from Ireland and to the instruction of Irish consignors as to the exact type of carcass required at Smithfield.

The question of tuberculous lesions in pig carcasses has been investigated by Dr. Stanley Griffith and Mr. Cornell of the comparative pathology department, Cambridge, and it has been found that 30 per cent. of the lesions examined contained tubercle bacilli of the avian type. A warning is therefore given to pig-feeders that tuberculous infection to pigs may arise from at least four sources—namely: (1) feeding on cow's milk containing bacilli; (2) suckling a sow with diseased mammæ; (3) feeding in pastures with infected cows; (4) feeding with fowls, many of which may be tuberculous.

It is inferred from the amount of diseased meat deposited at Smithfield that many local authorities do not enforce the Public Health (Meat) Regulations, 1924. One inspector, who called at the market, admitted the impossibility of carrying out the regulations, as he had 29 private slaughter-houses to supervise in addition to his other duties. The National Federation of Meat Traders recognised that honourable traders are the losers by this unequal inspection, and ask for a systematic form of inspection throughout the country. Caseous lymphadenitis in Australian sheep carcasses continues to give trouble and shows some increase in New Zealand carcasses and also in Chilian mutton. The Chilian Government, in consequence, have decided to establish a veterinary meat inspection service and temporarily appointed four well-qualified British veterinary officers to go out to Chili to initiate the new service. Much attention is being given to the 1924 regulations, which deal with the more cleanly handling and transport of meat.

A Housing Scheme.

During the year Windsor House, Shepherdess-walk, was completed in accordance with plans prepared by the city engineer and opened. Dr. Willoughby expresses his regret that ill-health and resignation had made it impossible for Dr. Howarth to see through to its fruition the scheme which he had instituted as far back as 1919 for the improvement of the Hutchison-street area. Windsor House covers nearly two acres; the centre of the square is a big garden for adults, while round the whole of the site is a spacious playground for children. The building comprises 104 flats, consisting of two, three, four, and five rooms respectively with a total accommodation for 600 persons. The cost with the land was about £116,000 and has been borne by the City Corporation without assistance from the National Exchequer.

Rat Repression.

Much attention has been given to rat repression from every point of view. One difficulty is that the

law looks to the occupier to provide the remedy, and it is, of course, quite unreasonable to expect an occupier to go to great expense in rendering a building rat proof. The use of bacterial virus has raised some points of interest. Thus the virus used by certain tenants at the Central Meat Market was examined by the city bacteriologist in 1913 and found to be inert. This justifies the efforts of the Danish Government, reported in our columns recently, to keep their bacterial virus at a high pitch of virulence, by the employment of a skilled bacteriologist. Again in 1920 several of the viruses used appeared to be *Bacillus enteritidis* (Gaertner) and raised the question of the possibility of the infection of human food. Of the various kinds of traps used the "break-back" traps appear to give good results, but the varnish traps are best of all. It is pointed out in the report that there is no law to control the use of many deadly raticides such as strychnine, arsenic, and phosphorus.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 19TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 336 (last week 319); scarlet fever, 1717; diphtheria, 999; enteric fever, 53; pneumonia, 1333; puerperal fever, 42; puerperal pyrexia, 109; cerebro-spinal fever, 5; acute poliomyelitis, 5; acute polio-encephalitis, 5; encephalitis lethargica, 20; dysentery, 6; ophthalmia neonatorum, 104. No cases of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 25 counties: London, 10 (Islington 1, Lambeth 1, Wandsworth 7, Woolwich 1); Bedford, 1; Berks, 1; Chester, 1; Derby, 9; Durham, 72 (Gateshead 24, South Shields 39); Essex, 5 (Leyton 4, Wanstead 1); Lancaster, 16; Leicester, 1; Lincoln, parts of Kesteven 5, parts of Lindsey 2; Middlesex, 3; Norfolk, 1; Northumberland, 15; Nottingham, 18; Soke of Peterborough, 1; Somerset, 2; Stafford, 29 (Walsall 21, Stoke-on-Trent 8); Surrey, 8 (Kingston-on-Thames 7, Reigate 1); Warwick, 3; Yorks, North Riding 5, West Riding 66; City of York, 7; Glamorgan, 12; Monmouth, 43.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on May 22nd–23rd was as follows: Small-pox, 30; scarlet fever, 1640; diphtheria, 2099; enteric fever, 31; measles, 1052; whooping-cough, 150; puerperal fever, 13 (plus 13 babies); encephalitis lethargica, 68; "other diseases," 19. At St. Margaret's Hospital there were 16 cases of marasmus, and 9 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were no deaths from small-pox, 5 (2) from enteric fever, 60 (24) from measles, 11 (1) from scarlet fever, 46 (10) from whooping-cough, 27 (7) from diphtheria, 33 (7) from diarrhœa and enteritis under two years, and 65 (11) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London occurred at Salford, West Hartlepool, and Sunderland. Of the 36 fatal cases of measles outside London 5 were reported from Sheffield. Of the 36 fatal cases of whooping-cough outside London 6 were reported from Birmingham, 5 from Liverpool, and 5 from Manchester. During the same week 19 deaths from whooping-cough were reported from Glasgow.

Hitherto the record of deaths from small-pox published in the weekly returns has been restricted to cases in county boroughs and the great towns. In future a supplementary statement will be issued each month giving particulars of deaths in other areas. Thus during the month of April there were outside London and the great towns 4 deaths certified as due to small-pox, either as principal or contributory cause. These were assigned to Malling R.D., Lichfield M.B., Royal Leamington Spa M.B., and Honley U.D.

The number of stillbirths registered during the week was 305 in the great towns—corresponding to a rate of 44 per 1000 births—including 59 in London.

MEDICAL TOUR IN ITALY.—A visit of foreign medical men to Italian spas will take place from Sept. 5th to 21st next. Further information may be had from the Italian Travel Bureau, 16, Waterloo-place, London, S.W. 1

Obituary.

SIR JAMES HODSDON, K.B.E., F.R.C.S. EDIN.,

LATE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

WE regret to announce the death of Sir James Hodsdon, Consulting Surgeon to the Royal Infirmary, Edinburgh, and formerly President of the Royal College of Surgeons of Edinburgh. He was found dead early on Tuesday morning last in his sleeping-berth on the train by which he was returning to Edinburgh after attending the recent session of the General Medical Council as representative of the Edinburgh College and a member of the Dental Board.

James William Beeman Hodsdon was born in 1858 and received his early education at Sherborne School, whence he proceeded to Belfast, entered Queen's College, and graduated in medicine at the Queen's University in 1881; simultaneously he took the Scottish conjoint qualifications, proceeding in 1883 to take the Fellowship of the Royal College of Surgeons. He then took advantage of unusual opportunities, and carried out much post-graduate work in Paris, Vienna, and London, and returning to Edinburgh was appointed lecturer on clinical surgery at Surgeons' Hall. This appointment was followed by election to the staff of the Royal Infirmary, the great charity which he served for the rest of his life, being at the time of his death the senior consulting surgeon. At the Infirmary he made for himself a high reputation both as clinical worker and as a remarkably clear and effective teacher, and these qualities were recognised by many educational bodies and led to frequent demand for his services as an examiner; in this capacity he was retained at different times by the Universities of Edinburgh, Durham, and Belfast, as well as by the Royal College of Surgeons of Edinburgh, while for a time he acted as chairman of the committee of management of the Scottish Conjoint Board.

As might be expected, his opinions were always received on the General Medical Council with respect, for he had been a member for 22 years, being chosen by the College of Surgeons in 1906 to represent the Corporation in succession to Sir Patrick Heron Watson. His long experience, both as surgeon and teacher, gave him a position from which to express all-round opinions and to look at medico-political questions in the large, and he will be greatly missed by the Council, and at the Dental Board—all the more because of his invariable and quiet courtesy.

In 1914 Hodsdon was elected President of the Royal College of Surgeons of Edinburgh, and at the outbreak of War took a commission as Major R.A.M.C. (T.), being attached to the 2nd Scottish General Hospital. At the close of hostilities, and after repeated mention in despatches, he was made C.B.E. (military), and in 1920 K.B.E. (civil).

Although he was the author of papers on various surgical subjects he was not a man who took readily to literary expression. But his contributions to the Edinburgh Hospital Reports, and the *Edinburgh Medical Journal*, made early in his career, were practical pieces of work, and his record of an experimental inquiry into the influence of the pulmonary blood pressure upon the collapsed lung, published in our own columns, attracted serious attention.

Hodsdon was 70 years of age at the time of his death, though he looked, at any rate until recently, much younger, and the uninterrupted manner in which he discharged his public duties, both on the General Medical Council and the Dental Board, has made his sudden death a shock to many. But at the close of the recent session of the Council it was evident that he was in considerable suffering, and it was contrary to advice that he undertook the long journey on which he died.

Medical News.

UNIVERSITY OF LONDON: *University College.*—Examinations for a Bucknill scholarship and for two exhibitions will begin on June 26th, the subjects of examination being chemistry, physics, botany, and zoology. Candidates' entries, in proper form, should reach the secretary of the College before June 9th.

UNIVERSITY OF SHEFFIELD: *Centenary of the Medical School.*—Although for some years previously there had been medical education of a kind in Sheffield, the present medical school dates from July, 1828, when the foundation of the Medical Institute in Arundel-street was laid, and a medical school with a corporate governing body first came into being. The Faculty of Medicine of the University of Sheffield has therefore decided to celebrate the centenary of the medical school this year, and on July 11th a congregation will be held, at which the Chancellor (the Marquis of Crewe) will receive delegates from the medical faculties of other universities, by whom addresses will be given. Past and present students of the medical school, as well as members of the medical profession in Sheffield and district, and others interested in the welfare of the school, are invited to attend. To mark the occasion the Faculty is about to publish a history of the medical school in Sheffield, written at its request by the late Dr. W. S. Porter.

THE FORTHCOMING CANCER CONFERENCE.—The provisional programme of the International Conference on Cancer, to be held from July 16th to 20th, has been framed. The mornings will be devoted alternatively to general and sectional discussions. Of the former two sessions will be held concurrently at different places—namely, the House of the Royal Society of Medicine and the College of Nursing, on July 17th and 19th, these buildings being conveniently near together. The list of speakers who have promised to contribute to the discussions is impressive. Under the presidency of Sir John Bland-Sutton, Prof. C. Regaud will open the debate on the relative values of surgery and radiation in the treatment of cancer of various regions. Prof. G. Doderlein and Mr. Malcolm Donaldson will deal with the cervix uteri, Sir Charles Gordon-Watson, Mr. W. E. Miles, and Mr. P. Lockhart-Mummery with the rectum, Prof. Burton Lee, Mr. Sampson Handley, and Mr. G. Keynes with the breast, and Dr. D. Quick, Mr. Stanford Cade, and Mr. Douglas Harmer with the buccal cavity. Prof. J. Ewing will open a discussion on the ætiology of cancer, to be followed by Prof. F. Blumenthal, Prof. A. Borrel, Prof. Rhoda Erdmann, and Prof. H. T. Deelmann. Chemotherapy will be discussed by Prof. W. Blair Bell, Prof. F. Carter Wood, Dr. T. Lumsden, and Dr. Burton Simpson. The special sections, to meet on July 18th and 20th, are concerned with radiology, surgery, medicine and diagnosis, pathology, statistics, and public health. In the radiology section biological effects of radium and X rays, with special reference to the factors of wave-length, intensity of radiation, and duration of exposure will be discussed on the first day, Prof. S. Russ presiding, whereas the second day will be devoted to the effects of radium and X rays on the blood vascular and lymphatic systems. In the surgery section the classification and treatment of bone sarcoma will be the subject of communications by Prof. Ewing and Mr. Sampson Handley; while Sir Berkeley Moynihan will address the section on the early recognition and treatment of cancer of the stomach, and will be followed by Mr. Gordon Taylor, Mr. A. J. Walton, Dr. E. I. Spriggs, Dr. A. F. Hurst, Prof. M. Stewart, and Prof. D. P. D. Wilkie. In the section of medicine on July 18th Sir Thomas Horder will consider cancer criteria, and Dr. Hutchison the frequency of intrathoracic tumours, while on July 20th Sir Thomas Horder and Sir William Willcox will open the discussion on diagnostic methods: Dr. A. Leitch will give an address to the pathology section on occupational cancer, and will be followed by Dr. A. Scott, Mr. A. H. Southam, Dr. W. J. O'Donovan, Prof. Schmorl, Dr. A. Sladden, and Dr. L. Savatard. Prof. M. Greenwood will speak at a joint session of the pathology, statistics, and public health sections on geographical and racial prevalence of cancer. Contributors to other meetings of the statistics and public health section include Dr. T. H. C. Stevenson, Dr. C. Bridge, Dr. S. A. Henry, Prof. de Vries, Dr. Hoffman, Dr. E. L. Kennaway, Prof. E. L. Collis, and Dr. Janet Lane-Claypon. Sir George Buchanan will give an address on public action in regard to cancer. In the afternoons visits will be paid to hospitals and institutions, a liaison officer being appointed who will have charge of each party. Further information may be obtained from the chairman of the Executive Committee, Mr. Cecil Rowntree, at 9, Upper Brook-street, London, W. 1.

UNIVERSITY OF OXFORD.—Sir Farquhar Buzzard, Regius Professor of Physic in the University, has been elected an honorary Fellow of Magdalen College, of which he was formerly a commoner.

THE President of the French Republic has conferred the Cross of Officier de la Légion d'Honneur on Dr. George H. F. Nuttall, F.R.S., Quick Professor of Biology in the University of Cambridge.

ROYAL MICROSCOPICAL SOCIETY.—The annual Pond Life and General Microscopical Exhibition will be held at 20, Hanover-square, London, W., on Wednesday, June 6th, at 7.30 P.M.

NURSES' MISSIONARY LEAGUE.—An At Home of the League will be held on Thursday, June 7th, at 3.15 P.M., at the Church House, Great Smith-street, London, S.W. 1. Sir Maurice Craig will take the chair and the Bishop of Blackburn will give an address. Invitation cards may be had from Miss Richardson, at 135, Ebury-street, London, S.W. 1.

NATIONAL INSTITUTE FOR THE DEAF.—A conference will be held at University College, Gower-street, London, on June 6th, to consider the claims of the deaf and dumb to higher education and technical training. It will be attended by delegates from universities, education authorities, special schools, and welfare societies for the deaf. Lord Charnwood will preside.

INTERNATIONAL DAIRY CONGRESS.—The programme has been issued of the Eighth World's Dairy Congress, to be held in England from June 26th to July 12th. Sessions will be held at the Central Hall, Westminster, from June 26th to 30th, and subsequently at Reading and in Scotland, At the Royal Agricultural Society's show at Nottingham, from July 10th to 14th, there will be special exhibits of dairy machinery.

ULSTER MEDICAL SOCIETY.—The sixth-sixth annual general meeting of this society was held in the Medical Institute, Belfast, on May 23rd, with Dr. J. C. Rankin, the President, in the chair. The following were elected to office for the session 1928–1929: President, Prof. T. H. Milroy; vice-presidents, Mr. S. T. Irwin and Dr. T. M. Tate; hon. secretary, Dr. R. M. Beath; hon. editorial secretary, Dr. J. A. Smyth; hon. treasurer, Dr. J. T. Lewis; hon. librarian, Dr. W. L. Storey; hon. assistant librarian, Dr. S. Simms. Council: Dr. F. M. B. Allen, Dr. W. Burns, Dr. A. J. Dempsey, Mr. P. T. Crymble, Dr. J. C. Loughridge, and Dr. J. W. Peatt.

THE INFANTS HOSPITAL, VINCENT-SQUARE.—The announcement last week of the great generosity of Sir Gomer Berry, the chairman of this institution, in giving £50,000 for the erection of a new maternity block makes timely some information concerning the immediate designs of the committee of management. The following are a few particulars with respect to the proposed enlargement of the hospital. A large site continuous with that of the existing hospital has been acquired in Vincent-square. It is about five times the size of the present site and will give ample room on an island area for the new buildings, which are designed to accommodate about 140 patients. There will be a complete surgical department, with operating theatres, enabling the surgery done in the hospital to be much extended in scope. The accommodation for the infants, who will be of the same age-limit as at present—i.e., up to 5 years—will be on the wardlet system; that is to say, that each baby will be isolated in some form of cubicle, largely consisting of glass, so designed as to prevent the conveyance of infection from one child to another. It is proposed also to construct the maternity block more or less on the same system. Each cubicle will have access to the balcony for open-air treatment. In orientation the building is designed to make the utmost use of natural sunlight, although provision will also be made for the supply of artificial sunlight. The out-patient, special, pathological, X ray, and orthopædic departments will be designed on the most up-to-date and approved systems. It is expected that the building and equipment of the proposed hospital will entail a cost of about £250,000. The maternity block, for the building of which Sir Gomer Berry's contribution of £50,000 is earmarked, is intended to accommodate about 36 lying-in women. The reason for including maternity cases is to ensure that the teaching facilities at the hospital shall afford experience in the feeding and treatment of new-born babies, and in connexion with this a new antenatal clinic is to be added. There will be ample space devoted to the housing of the staff of nurses and probationers that will be required in the enlarged institution.

Lieut.-Colonel J. W. D. Megaw, having been appointed Inspector-General of Civil Hospitals, Punjab, has relinquished his editorship of the *Indian Medical Gazette*, which he has held for the past seven years. Both here and as Director of the Calcutta School of Tropical Medicine he will be sincerely missed.

BRITISH INSTITUTE OF RADIOLOGY INCORPORATED WITH THE RONTGEN SOCIETY.—The following officers have been appointed: President, Mr. G. W. C. Kaye, D.Sc.; vice-presidents, Sir W. H. Bragg, F.R.S., Dr. Robert Knox, and Dr. L. A. Rowden; hon. secretaries, Dr. Stanley Melville and Mr. G. Shearer, D.Sc.; hon. editors, Dr. Robert Knox and Mr. G. W. C. Kaye. The medical members of the council are Dr. A. E. Barclay, Dr. G. B. Batten, Dr. R. M. Beath, Dr. N. Z. Finzi, Mr. C. T. Holland, Dr. J. E. A. Lynham, Major D. McGrigor, Dr. S. G. Scott, and Dr. J. Duncan White.

BELGRAVE HOSPITAL FOR CHILDREN.—Last year 1852 sick children were admitted to the wards of this hospital in Clapham-road, of whom 96 per cent. came from South London, and the remainder from adjacent districts. The out-patients' department dealt with 16,556 children under conditions so crowded that the medical and nursing staffs are greatly hampered and mothers and infants are kept waiting much too long. A site has been acquired near the hospital, large enough for the erection not only of a new out-patients' building sufficient to meet the possible demand for many years to come but also of a nurses' home. A ward of 12 beds is now available for the admission of children of parents of limited means at a fee of 3 guineas a week.

COMMITTEE OF INQUIRY ON LEAD-ETHYL PETROL.—The committee conferred on May 25th with Surgeon-General Cumming, the head of the Public Health Service of the United States of America. Dr. Leake, one of the senior officers of that Service, was also present. The extensive researches which have been conducted in America by the Public Health Service and others for the purpose of ascertaining whether there was any risk of lead poisoning by the use of ethyl petrol were fully discussed. A further meeting will be held in Room 61 on the second floor of H.M. Office of Works, St. James's Park, London, S.W. 1, at 11 A.M. on June 6th, for the purpose of taking evidence from Sir William Pope, F.R.S., Prof. H. B. Baker, F.R.S., and Prof. G. I. Finch. The proceedings at that meeting will be open to the public.

ROYAL MEDICAL BENEVOLENT FUND.—The total sum which has been voted this year in grants to medical men, their widows or orphans who have appealed for help amounts approximately to £4744, as against £3502 during the corresponding period of last year—an increase of £1242. These figures prove that there is a greater demand on the Fund this year that ever before; subscriptions and donations, however, do not show an equivalent increase, for over the same period they have only risen by £500. An urgent appeal is made for subscriptions and donations, which should be sent as soon as possible to the hon. treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1. The following are notes on a few of the cases helped at the last meeting:—

Dr. H., aged 63. Had to give up practice three and a half years ago owing to cataract in both eyes. He is too blind to see patients and can do no work of any kind. During these last three and a half years he has had to maintain himself, his wife, and two young children on his small capital which is now exhausted. The Fund came to his help at the time he was being sued for his water rate and was unable to pay his rent which was in arrears. An emergency grant of £15 was made and a further sum of £40 voted. Assistance is being sought from other charitable funds.

Dr. W., aged 78. Old age and increasing deafness have prevented this applicant from continuing in the profession, and for some time he has been forced to live on capital. Other family troubles have made heavy financial claims upon him so that all his life savings are now exhausted and he has had to apply for the old-age pension of £26 a year. A nephew gives some help. Voted £40.

Widow, aged 56, of M.R.C.S., L.R.C.P. Owing to ill-health the applicant's husband sold his country practice ten years before he died, and from that time up to his death he and his wife had to live on capital. At his death the widow found there was nothing left; his life policies had been mortgaged years before; there were debts and no money to pay for the funeral. The widow had to sell furniture and other privatepossessions in order to meet the expenses. Her son, who is married and has one child, has been able to give a little assistance, but owing to bad trade he can now only contribute 10s. a week. Voted £26.

Daughter, aged 59, of M.D. The applicant has been teaching as a governess for 42 years, having started at the age of 17. Now at her present age she cannot get regular employment. Her savings bring in £50 a year. She was unable to save more as she had to help to keep her mother, who was an invalid for the last 12 years of her life. Voted £26.

WARWICKSHIRE MEMORIAL SANATORIUM.—Last week the Bishop of Coventry dedicated an altar and sanctuary which have been built on to the existing schoolrooms at this institution at Hertford Hill, near Warwick. When not in use the altar is divided by a movable screen from the remainder of the building which is used as a concert hall and cinema.

LONDON JEWISH HOSPITAL.—Additions to this hospital at Stepney Green have been opened by the Lord Mayor of London, Sir Charles Batho. The extensions include a children's ward of 12 cots, five separate rooms for accident and observation cases, an extensive casualty department, an X ray room, artificial sunlight and massage departments, accommodation for 35 nurses, and a restaurant.

THE LATE DR. H. M. WALLER.—Dr. Harry Mortlock Waller, who died at Nuneaton on May 16th at the age of 56, was at one time medical officer to the late Rajah of Sarawak and to the Sarawak Government. He qualified as M.R.C.S. Eng. from St. Bartholomew's Hospital in 1918 and was appointed medical officer to the Ministry of Munitions, subsequently acting as medical referee to the Ministry of Pensions. He had lived at Nuneaton for the past three years.

DONATIONS AND BEQUESTS.—Among other bequests Mr. William Francis Paul, O.B.E., J.P., of Orwell Lodge, Ipswich, left £2500 to the Ipswich and East Suffolk Hospital, as to £2000 to endow a bed to be called the Orwell Lodge bed and as to £500 to Samaritan Society of the hospital; 200 guineas to the Royal Surgical Aid Society; and £200 each to the Convalescent Home, Felixstowe, and the Croydon Hospital, Felixstowe.

PRESENTATION TO DR. D. S. DAVIES.—On May 24th the staff of the Bristol health department paid a warm tribute to Dr. D. S. Davies, who recently retired after 42 years as medical officer of health for the city. Dr. B. A. I. Peters, who took the chair in the enforced absence of the new medical officer, Dr. R. A. Askins, spoke in appreciative terms of Dr. Davies not only as their late chief but as their friend. In particular he had shown the scientific spirit in medicine, and it was to be hoped that he would now have leisure to give the profession as a whole the benefit of his extensive knowledge of epidemiology. Dr. Peters then presented a writing bureau and bookcase to Dr. Davies who recalled, in returning thanks, some of the conditions of work at the beginning of his term of office. Forty-two years ago the only hospitals belonging to the public health authority were two wooden sheds in a stone-yard, one labelled "fevers," and the other "small-pox." When first they had built proper isolation hospitals it had been difficult to get parents to send their children for treatment; now they were not only willing but often insisted that they should be admitted. In conclusion Dr. Davies wished the members of the staff great success in the future under their new chief. After other tributes had been paid by Mr. Robinson, chief inspector, and Dr. J. C. Heaven, the proceedings terminated

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, June 4th.—8.30 P.M., SOCIAL EVENING. Fellows and guests will be received in the Library by the President and Lady Berry. At 9.15 P.M. Mr. C. Leonard Woolley will give an illustrated address on Recent Excavations at Ur of the Chaldees. Music and light refreshments. The Main Library will close at 5 P.M., but readers will be accommodated in other rooms until 6.30 P.M.

WEDNESDAY.—8.30 P.M., SURGERY. Annual General Meeting: Election of Officers and Council. Discussion on Hare-lip, to be opened by Dr. Victor Veau (Paris). Mr. C. H. Fagge, Mr. T. Pomfret Kilner, and others will speak.

FRIDAY.—5 P.M., OPHTHALMOLOGY. (Tea at 4.30 P.M.) (Cases at 4.45 P.M.) *Papers* at 5 P.M. Mr. Montague Hine: Report on a Case of Neuro-fibromatosis of the Eyelid, and of a Case in which a Glass Ball Burst in the Socket. Mr. F. Ridley: Lysozyme-antibacterial Body Present in Great Concentration in Tears, and Especially its Relation to the Human Eye. Annual General Meeting at 6.15 P.M.: Election of Officers and Council. The Library will be open until 10 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, June 5th.—5 P.M., Dr. Charles Bolton: The Interpretation of Gastric Symptoms. (First Croonian Lecture.)
THURSDAY.—5 P.M. (Second Croonian Lecture.)

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
MONDAY, June 4th.—1.30 P.M., Mr. R. J. Cann: Examination of the Pharynx.
WEDNESDAY.—1.30 P.M., Mr. N. MacKeith: Examination of the Larynx.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.
TUESDAY, June 5th.—4 P.M., Mr. A. Tudor Edwards: Recent Advances in Surgery of the Chest.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.
THURSDAY, June 7th.—5 P.M., Sir Oliver Joseph Lodge The Uses We Make of the Ether of Space.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, June 5th.—4 P.M., Mr. Kenneth Walker: Treatment of Prostatic Obstruction.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, June 4th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Vascular Disease as it Affects the Central Nervous System.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Armour: The Surgical Aspect of Compression Paraplegia.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Mr. Just: The Nervous Complications of Otitis Media.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Familial Neuritis Muscular Atrophies.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.
MONDAY, June 4th.—2.30 to 5 P.M., Medical, Surgical and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

ANCOATS HOSPITAL, Mill-street, Manchester.
THURSDAY, June 7th.—4.15 P.M., Mr. Platt: Treatment of Fractures with Demonstrations.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
TUESDAY, June 5th.—3.30 P.M. (at the Jessop Hospital), Mr. Stacey: Obstetrical Cases.
FRIDAY.—3.30 P.M. (at the Royal Hospital): Mr. Townrow: Clinical Cases.

LONDON CLINICAL SOCIETY.
THURSDAY, June 7th.—8.30 P.M. (at the London Temperance Hospital), Sir Berkeley Moynihan: Medicine in Art. (Macalister Lecture.)

Appointments.

PATEY, D. H., M.S. Lond., F.R.C.S. Eng., has been appointed Surgeon to Out-patients at the Hampstead General and North-West London Hospital.

WALLEN, Florence, L.R.C.P. Lond., F.R.C.S. Medical Officer of Health, Nantyglo and Blaina Urban District Council, Mon.

WHITELAW, A. D., M.B., Ch.B. Camb., D.P.H., Assistant Medical Officer of Health for Bradford.

Certifying Surgeons under the Factory and Workshop Acts: CRABTREE, H. V., M.B., Ch.B. Manch (Exeter); and CRAWSHAW, J. W., M.B., Ch.B. Manch. (Tyldesley, Lancaster).

Vacancies.

For further information refer to the advertisement columns.

Alberta, Canada, Municipal District of Woodford, No. 550, Onoway.—Municipal Doctor. 2000 Dollars.
All Saints' Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, S.W.—Res. Sen. H.S. At rate of £200. Also H.S. At rate of £150.
Ashton-under-Lyne, Lake Hospital and Darnton House.—Med. Supt., &c. £300. Also Second Res. M.O. £150.
Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.
Burnley, Primrose Bank Institution.—Res. M.O. £300.
Cambridge University Pathological Laboratory.—John Lucas Walker Studentship. £300.
City of London Hospital for Diseases of Heart and Lungs.—Two H.P.'s. At rate of £100.
Coventry, Coventry and Warwickshire Hospital.—Res. H.S., also Res. H.P. Each at rate of £125.
Dorchester, Dorset Mental Hospital, Herrison.—Jun. Asst. M.O. £300.
Dreadnought Hospital, Greenwich.—H.P. and H.S. At rate of £110.
Durham County Hospital.—Jun. H.S. At rate of £120.
Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obst. Asst. also 2 H.S.'s. each at rate of £50.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—H.P. At rate of £150.
Hastings, Royal East Sussex Hospital.—Hon. Asst. Surg.
Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. £250. Also H.P. and H.S. Each £50.
Hove, Lady Chichester Hospital.—H.P. At rate of £100, also Jun. At rate of £50.
Ipswich, East Suffolk and Ipswich Hospital.—Hon. Asst. Ophth. S.
King's College Hospital, Denmark Hill, S.E.—Jun. Aural S.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.
L.C.C. Mental Hospitals' Service.—Eighth Asst. M.O. £300.
Manchester Ancoats Hospital.—H.S. At rate of £100.
Manchester Babies Hospital, Burnage lane, Levenshulme.—Jun. M.O. At rate of £50.
Manchester, Baguley Sanatorium.—Asst. M.O. £350.
Manchester City.—M.O. £600.
Manchester Royal Infirmary.—Dickinson Research Travelling Scholarship in Medicine. £300.
Manchester Royal Infirmary.—Asst. M.O. to Dermatological Department. £20.
Margate, Royal Sea Bathing Hospital.—Two H.S.'s. Each at rate of £100.
Middlesex Hospital and Medical School.—Med. Registrar. £300.
Miller General Hospital for South East London, Greenwich-road, S.E.—H.P. At rate of £125.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Nottingham City Mental Hospital.—Deputy Med. Supt. £650.
Oldham Royal Infirmary.—3 H.S.'s. Each at rate of £175.
Plumstead and District Hospital, High-street, S.E.—First Asst. M.O. £400.
Queen Mary's Hospital for the East End, E.—H.P.'s, H.S.'s, &c.
Royal Chest Hospital, City-road, E.C.—Med. Reg. £50.
St. Andrew's Hospital, Dollis Hill, N.W.—Res. M.O. At rate of £150.
St. Mary's Hospital, W.—Asst. Director to Surgical Unit. £750.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Clin. Assts.
St. Thomas's Hospital Medical School.—University Chair of Dietetics. £1000.
Shrewsbury, Berrington Hospital.—Res. M.O. £200.
Southport General Infirmary.—Jun. H.S. £150.
South Shields, Ingham Infirmary.—Sen. and Jun. H.S.'s. £200 and £150 respectively.
Swansea Hospital.—H.S. £150.
University of London.—External Examinerships.
University of London, South Kensington, S.W.—Graham Scholarship in Pathology. £300.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Sen. Res. M.O. £250.
Willesden General Hospital, Gynæcological Out-Patient Dept.—Clin. Asst. Surgical Out-patient Dept. 2 Clin. Assts.

Births, Marriages, and Deaths.

BIRTHS.

BUSH.—On May 25th, at 5, Lansdown-place, Clifton, Bristol, the wife of Dr. Gilbert Bush, of a son.
GOOD.—On May 24th, at Farquhar-road, Edgbaston, the wife of Dr. J. Percy Good, of a son.
ROACHSMITH.—On May 22nd, wife of Dr. C. E. Roachsmith, of Landguard, Sawbridgeworth, Herts, of a son.
STIRLING.—On May 15th, at Corringway, Golders Green, N.W., the wife of Major A. Dickson Stirling, D.S.O., R.A.M.C., of a daughter.

MARRIAGES.

MCALLEY—JONES.—On May 19th, at Normacot Church, Longton, Staffs., Robert Ian McAlley, M.B., Ch.B., to Grace Ivernah, only daughter of Mr. Albert E. Jones, Lightwood Chase, Longton, Staffs.

DEATHS.

HODSDON.—Suddenly, on May 28th, Sir James Hodsdon, K.B.E., M.D., F.R.C.S.E., of 6, Chester-street, Edinburgh.
LAWRENCE.—On May 22nd, at 66, Portchester-road, Bournemouth, Sidney Cameron Lawrence, M.B., D.P.H., late M.O.H., Edmonton.
LONGFIELD.—On May 23rd, at Plymouth, Deputy Inspector-General William Digby Longfield, R.N. (retired), in his 90th year.
SMITH.—On May 26th, at Yew Tree Cottage, Alcester, Warwickshire, Thomas Haywood Smith, L.R.C.P., M.R.C.S., aged 85.
WALLER.—On May 16th, at "The Drachenfels," Nuneaton, Dr. Harry Mortlock Waller, in his 57th year.

N.B.— A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

VORONOFF'S METHOD OF REJUVENATION.

THOUGH Dr. Serge Voronoff's method of testicular grafting has long been familiar to medical men in this country through the medium of his books (see THE LANCET, 1927, i., 446), the lecture delivered before the Cambridge Medical Society on May 23rd was the first which he has given in England. An audience of nearly 500 people gathered in the large anatomical theatre of the University to hear the address.

Dr. Voronoff, who spoke in French, began by describing how the increased virility associated with supernumerary testes and the decreased mental and bodily powers of eunuchs had directed his attention to the rôle of the sexual glands in maintaining mental and physical vigour. Attempts to transfer active testes to the scrotum of debilitated animals had failed at first, partly because the blood-vessels forming round them did not penetrate more than about 1 cm. into the transplanted tissue; if layers of graft thicker than this were used the whole behaved as a foreign body and was cast off by the organism. It was possible, however, to make grafts which retained their functional activity, and histological sections of successful grafts made at periods up to four years after transplantation showed that the gland tissue was still normal. His success with testicular transplantation in rams was illustrated by numerous photographs. One of them showed a ram 12 years old—a great age for this species—which was rejuvenated by grafting and had robust offspring. Four years later signs of senility again appeared and a second graft was done with striking results. This ram, said Dr. Voronoff, was still alive and was over 20 years of age, which would correspond to 160 in man. Transplantation of testes in domestic animals had also been done extensively with a view to increasing meat and wool production, and the results were impressive. It had been found that not only was the number of offspring of rams so treated increased by 20 per cent., but the weight of their wool and that of their offspring was greatly increased, the hair being longer, strong, and finer than that of normal animals.

Rejuvenation experiments in man had been first attempted with glands from dogs and rams but the grafts had not taken, and it was only when the testes of chimpanzees were tried that success was attained. Dr. Voronoff showed three photographs of patients before and after treatment, all of which seemed to show a profound change, though it was difficult to say how far this was a true "rejuvenation." One patient was a man who had been in a mental home for senile dementia, and whose mind was so feeble that he could not answer the simplest questions; six months after operation he was able to resume work as a pharmacist. A second was a French architect of 73 who was no longer able to work because he was physically and mentally deficient; three years after the testis of a monkey had been grafted he was able to resume work and said he felt 15 years younger. Dr. Voronoff made the interesting observation that in cases of arteriosclerosis and high blood pressure grafting had the effect of lowering the blood pressure to normal. In women ovarian grafting was found to have much less effect than testicular transplantation in men, but the effect was increased if portions of thyroid and pituitary gland were inserted at the same time, as was his present practice. He explained that it was difficult to get photographs of patients who had been rejuvenated as they were all very reluctant to sit. The lecture concluded with a film demonstrating the technique used in transplanting the testis of the monkey into man.

An account of a discussion of Voronoff's methods in Vienna will be found on p. 1142 of our present issue.

GLASS AS A POISON.

AT a meeting of the Medico-Legal Society on May 24th, Dr. Roche Lynch exhibited samples of powdered glass that had been used in attempts at homicide. One sample, administered in a chupatti, was made of the coloured glass bangles worn by native women; another had been mixed with sugar and given to a non-commissioned officer. It was interesting, in view of the sinister reputation of this substance, to hear that in the opinion of most authorities powdered glass is comparatively harmless. In 1825 a Dr. Jones narrated in THE LANCET how he used to administer it in two-scruple doses as a vermifuge, followed by calomel. Major D. R. Thomas, of the Indian Medical Service, said that out of 2000 poison cases he had observed in four years only one death had been caused by glass, and he did not think that finely powdered glass did any harm. He has seen, in the bazaar at Amritsar, kite-fliers dress their strings with glass powder for a game in which the object is to cut the opponent's line. Children ate sweets with their hands all over the powder, but looked quite healthy in spite of it. This supports the opinions of the compilers of the Ministry of Health's report on glass fragments in food.[1] Large fragments are, of course, another matter; one of Dr. Roche Lynch's samples was taken from the alimentary canal of a suicide, who had died in two hours. The stomach was badly scratched, and the intestine was lined with spicules, but there was no perforation. A diagnosis of cholera was made before closer examination detected the glass. The report emphasised, however, that glass fragments large enough to do damage were extremely rare in food, and Dr. Roche Lynch corroborated the finding that the better the maker the fewer the glass particles. Glass may find its way into bottles and jars during the welding together of the two moulded halves or during the filling of the jar with hot food, and whereas good manufacturers promptly reject faulty containers the less scrupulous ones send them out packed. One of Dr. Roche Lynch's samples consisted of powdered glass combined with arsenic to ensure its efficiency as a poison; in a country like India, where arsenic can be bought in any quantity in the bazaar, the chemical irritant is naturally more popular than the mechanical. Even in this country, with all its legal restrictions, powdered glass is rarely employed and arsenic very often. At the same meeting Sir William Willcox gave an absorbing account of the Armstrong case, passing round the actual chocolates with which the criminal attempted to poison his professional rival.

HEALTH PROPAGANDA BY PAMPHLETS.

THE Wesleyan and General Assurance Society of Birmingham continues to issue its valuable leaflets on health. The collection we have just received contains several new ones, whilst others show signs of revision. The society is not content with dealing with definite diseases and their prevention but offers general advice on such subjects as diet. Quoting the saying that "diet cures more than the lancet," they have prepared two more leaflets on the Why's and How's of Diet, entitled Points on Buying and Hints for the Cook. Whilst the intelligent housewife will welcome and profit by the information contained, it is less certain that it is worded tactfully enough for the average ruler of the kitchen. The infectious fevers are now mostly covered by separate leaflets, but it would be interesting to see what this enterprising bureau would make of one on small-pox and vaccination. The leaflets are on sale for distribution.

THE HARVEY BANQUET AT THE GUILDHALL.

WE have received a photograph of the centre section of the company present at the Harvey tercentenary banquet given by the Royal College of Physicians of London in the Guildhall on May 16th. The photograph was taken by Photographia, Ltd., who wish to state that, as it was impossible for the majority of those present to see the photographs before the company separated, copies may be obtained from their establishment at 17, Cheapside, London, E.C. The company was photographed in three sections: (1) a centre section, (2) the section on the Chairman's left, and (3) that on his right. The section submitted to us contains many good portraits, and some of our readers may wish to possess an illustrated memorandum of an interesting occasion.

GLYCOSURIA AND LIFE ASSURANCE.

To the Editor of THE LANCET.

SIR,—I was much interested in reading your leading article in THE LANCET of May 26th on the subject of glycosuria and heredity, in particular the concluding paragraph. In the year 1885, when in India, I took out a policy for £1000 on my life in the Commercial Union Assurance Company, when I was classed as A1. In 1887 I took out another policy in the same company for £500 and was again passed as A1. My examination took place on a Wednesday. On Saturday the same week I went before the medical referee for another company as I had proposed for another policy for £1000. This medical officer refused my life, stating I had diabetes and my life was not worth accepting. I was so astonished, seeing that only three days before I had been passed as A1, that I called on my own medical man, who examined me very closely and said he could find nothing wrong. I interviewed the company with a view to getting them to accept my proposal but was told nothing could be done in the face of their medical man's report. You will note the date 1887. I am still alive, am 72 years old, very active, in perfect health, and not a trace of sugar has ever been found in my system.

Not only has this mistaken report of my case resulted in loss of revenue to the company concerned, but it has done me the injustice of preventing me from getting any fresh insurance. I had intended taking out policies up to £5000, or perhaps more, for the benefit of my wife and children.

I am, Sir, yours faithfully.

May 26th, 1928. G. H.

[1] See THE LANCET, 1927, i., 881.